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AN EMPIRICAL INVESTIGATION INTO THE FACTORS CRITICAL TO THE EFFECTIVENESS OF ABS IMPLEMENTATION AT THE NATIONAL AND INTERNATIONAL LEVELS

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ZUSAMMENFASSUNG

Die vorliegende wissenschaftliche Arbeit untersucht kritische Faktoren zur Abschätzung der Effektivität der existierenden Instrumente Zugang und Vorteilsausgleich (im Folgenden ABS, Access and Benefit Sharing nach Art. 15 der Convention on Biodiversity) auf nationaler und internationaler Ebene hinsichtlich der effektiven Umsetzung der damit verbundenen Ziele.
Mit Hilfe der New Institutional Economics (NIE) wurden eine Reihe geeigneter Indikatoren für die o. a. Faktoren identifiziert. Eine globale schriftliche Befragung bei den Beteiligten am internationalen ABS-Prozess zu den Umsetzungsbedingungen der ABS- Instrumente bestätigte die Wichtigkeit and Gültigkeit der theoretisch abgeleiteten Faktoren und Indikatoren. Es wurde zudem bestätigt, dass die nationale Position zur ABS Politik sowie deren Umsetzung reagiert auf dynamische interne und externe Faktoren, z.B. politischen Druck, sich ändernde Nachfragesituation, neue Konkurrenten, neue Forschungsergebnisse, technologische Innovationen, Kritik von NGOs, dem Privatsektor, von Medien und Regierungen sowie Änderungen der gesetzlichen Rahmenbedingungen.

Die Arbeit geht auch auf die Frage ein, inwieweit institutionelles Lernen während der Verhandlungen zum Nagoya Protokoll über ABS beobachtet werden konnten. Es konnte gezeigt werden, dass verschiedene innovative Prozesse genutzt wurden, um Blockaden im Verhand-lungsprozess zu überwinden, so dass man in der Tat von einem signifikanten Lernprozess während der Verhandlungen zum Nagoya Protokoll sprechen kann. Eine Herausforderung wird sein, dieses Lernen zu institutionalisieren, damit es die Implementierung von ABS informieren kann. Aus den Ergebnissen der Arbeit wird die Empfehlung abgeleitet, einen polyzentrischen Ansatz für die ABS-Implementierung zu wählen, der sich auf die Erfahrungen des institutionellen Lernens gründet. Dieser Ansatz betont, dass die Implementierung des Protokolls nur dann erfolgreich sein kann, wenn die Privatwirtschaft sowie indigene und lokale Gemeinschaften in den Prozess eingebunden werden.
Die Namibische Fallstudie zeigt die Nützlichkeit der identifizierten kritischen Faktoren und Indikatoren für die Beurteilung von ABS Implementierung. Für Namibia wurde diese Entwicklung als klar positiv eingeschätzt. Die Ergebnisse der Fallstudie können zur Gestaltung einer angemessenen ABS-Politik sowie zur Optimierung ihrer Durchführung beitragen.

ABSTRACT

The research presented in this thesis firstly investigates critical factors for assessing the effectiveness of existing Access and Benefit Sharing (ABS) instruments at the national and international levels with respect to the effective implementation of the associated goals in line with Article 15 of the CBD. The analysis and identification of indicators for the critical factors took place within the theoretical framework of New Institutional Economics (NIE).

A global stakeholder survey on the necessary conditions for effective ABS instruments implementation confirmed the importance and validity of the theoretically derived critical factors and their indicators. Besides, it was confirmed that national ABS policy and implementation respond to dynamic internal and external factors like political pressure, changing market demand, new competitors, new scientific findings, technology innovations, criticism from NGOs, industry, media, governments as well as legal changes.

The study also looked at the question as to whether institutional learning was observed during the negotiation of the Nagoya Protocol. This was confirmed given that different innovative processes were used to transcend some of the blockages that blocked fluidity in negotiations and one can thus indeed speak of a significant learning process during the negotiations of the Nagoya Protocol. Based on the insights from the findings, a polycentric approach to ABS implementation is suggested, importantly involving both the private sector and indigenous and local communities if success is to be achieved.

A case study in Namibia showed that the identified critical factors and their indicators are indeed useful tools for assessing ABS implementation. It showed a clear progression over time in how the Namibian government had been dealing with ABS. This assessment of the effectiveness of Namibia's approach to ABS implementation provides useful insights and lessons that could lead to improvements in ABS policy and implementation.

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LIST OF ABBREVIATIONS

ABS - Access and Benefit- Sharing

ABS - CDI ABS Capacity Development Initiative

ABS CDI -ABS Capacity Development Initiative

AU - African Union

CBD - Convention on Biological Diversity

CBBT - Capacity Building for Biotrade Project

CBNRM - Community Based Natural Resource Management

CEPA - Capacity Building Education and Public Awareness

CHM -Clearing House Mechanism

CITES - Convention on the International Trade in Endangered Species

COs - Civic Organizations

CRIAA - Centre for Research Action Africa

CSIR - Council for Scientific and Industrial Research

DRFN - Desert Research Foundation of Namibia

DSS - Directorate of Scientific Services

EIF - Environmental Investment Fund

EU - European Union

GATT - General Agreement on Tariffs and Trade

GIZ - German Agency for Technical Cooperation

GR- Genetic Resource

GRID - Genetic Resources Information Data Base

IA - Institutional Arrangement

IBPC - Interim Bioprospecting Committee

ICEMA - Integrated Community Based Ecosystem Management Project

IE - Institutional Environment

INP - Indigenous Natural Product

IR - International Regime

IRC - Internationally Recognized Certificate

IPR - Intellectual Property Rights

IPTT - Indigenous Plant Task Team

ITPGRFA - International Treaty Plant Genetic Resources for Food and Agriculture

JHB - Johannesburg

LIC's - Local and Indigenous Communities

MAT- Mutually Agreed Terms

MAWRD - Ministry of Agriculture Water and Rural Development

MET - Ministry of Environment and Tourism

MEAs - Multilateral Environmental Agreements
MTAs - Material Transfer Agreements
NIE - New Institutional Economics
MOU - Memorandum of Understanding
NAC - National Competent Authority
NAD - Namibian Dollar
NBRI - National Botanical Research Institute
NBSAP - National Biodiversity Strategy and Action Plan
NDP - National Development Plan
NGO - Non Governmental Organization
NNBP - Namibian National Biodiversity Programme
OAU - Organization of African Unity
PIC - Prior Informed Consent
R&D - Research and Development
SA - South Africa
SBSTTA - Subsidiary Body on Science and Technological Advice
SADC - Southern African Development Community
TK - Traditional Knowledge
TRIPS - Trade Related Aspects of Industrial Property Rights
UN - United Nations
UNCCD - United Nations Convention to Combat Desertification
UNDP - United Nations Development Programme
UNEP - United Nations Development Programme
UNECE - United Nations Economic Commission for Europe
UNFCCC - United Nations Framework Convention on Climate Change
UPOV - Union for the Protection of Plant Varieties
USD - United States Dollar

Do your utmost in trivial things
From that you can attain sincerity
This sincerity becomes apparent
From being manifest, it becomes brilliant
Being brilliant it affects others
Affecting others,
It changes them
Changing people, it transforms everything
It is only those with utmost sincereity
Who can transform everything
It will change
If you do your utmost, one by one,
The world will change.
The Classics: Asian Verse

CHAPTER 1

BACKGROUND OF THE STUDY

In academia there are disciplines, but in real life we have problems

~Anon

1.1 INTRODUCTION

We live in a world of human-imposed borders. These can be disciplinary, political, social, economic or institutional. While it can be argued that these borders serve various important needs, they can also serve as a serious deterrent to effective environmental management, conservation and ultimately global sustainable development (Farley et al, 2009 cited by Farley 2009). Political borders are perhaps the most visible dimension of the imposed borders. They are, however, rarely established to respect ecosystem boundaries, and even if an effort were made to do so, ecosystems are interconnected and their boundaries vague and fluid, while political boundaries are rigidly delineated.

Real world problems do not respect disciplinary or political border. Effective conservation, management and sustainable use of natural resources, therefore, require insights from social sciences, natural sciences and the humanities (Berkes and Folke, 1998). This is even more so as international environmental conventions which, essentially, are created to designs modern institutions to govern resources use, allocation and management. These are developed by diplomats, assisted by people from different academic and occupational backgrounds with a divergence of interests, in the quest for sustainable development.

Many developing countries today face various challenges, including the need for better, predictable and sustainable, new and additional financial resources to ensure effective implementation of environmental measures of sustainability. At the same time politicians from the so-called industrialised part of our world claim other pressing needs which prevent them from reacting positively to calls by their partners from non-industrialised countries. This dichotomy has created yet another border - that of a world divided by international discourse in which divisions are no longer clear cut. The real-world challenges of achieving sustainable development persist, regardless of which border you reside behind.

Today however, it has become clear that most challenges that we face in the environment sectors are driven by economic forces. We, therefore, need to recognise the need for economic analysis to help us make sense of them, and also to apply economic tools in our quest to address them (Farley, 2009).

While economic growth provides a fair measure, the effectiveness of such tools further needs to be assessed according to how well they achieve ecological sustainability, just distribution of benefits and contribute to a high quality of life for those involved in these environmental sectors, as well as those who benefit from their utilisation.

This study will, therefore, take a trans-disciplinary approach to assessing the effectiveness of Access to genetic resources and Benefit-Sharing[1] (ABS) regimes based upon critical factors derived from New Institutional Economics (NIE). Indeed, by its very nature, ABS regulations and legislative frameworks exist at the juncture of many interlacing bodies of law that 'criss-cross' the same biological material, bringing together a complex mix of scientific, conservation, trade, economic, human and legal elements that fit uneasily into a regulatory whole (Wynberg and Taylor, 2009). While no single law is ever likely to address these collectively, bringing traditional knowledge, innovation, science, biodiversity conservation, economic development, technology and equity, into an overall coherent and effective strategy, this remains the greatest challenge of all in this endeavour of regulating ABS (Ibid).

The above is what has led to the long process of negotiating what is now known as the Nagoya Protocol on Access and Benefit-sharing (the Nagoya Protocol) which is a key instrument towards such an overall coherent strategy to regulate ABS, because it is a key element that can facilitate the design of a global framework for sustainable development (ABS CDI, 2012). It represents a pivotal step forward in assisting countries to deal with ABS as providers and users of genetic resources. It not only aims at creating fair exchange conditions, but also provides enhanced legal certainty for valuing nature in a market economic approach and may be regarded as a building block for a global green economy (ABS CDI, 2012).

[1] Article 15.1 and 15.7 of the Convention on Biological Diversity provides for the sovereign rights of states over their resources and the need thus to regulate access to genetic resources as well as their right to stipulate the sharing of benefits from the utilization of genetic resources (CBD, 1992; Kamau et al, 2011). States have, therefore, been obliged to put in place the necessary administrative, police and legislative measures to regulate access to genetic resources and to ensure the equitable sharing of benefits.

The effective implementation of the Nagoya Protocol and domestic ABS instruments at the national level, however, remains a challenge given the complexities surrounding ABS and the need for a multi-dimensional, cross-sectoral and interdisciplinary approach. This study, therefore, attempts to focus on the effective implementation of ABS at the national and international levels through the use of a multi-lensed approach which combines new institutional economics, biology, psychology, ecology and environmental law.

1.2 ABS & THE STATE OF THE CRITICAL FACTORS

1.2.1 Snapshot of ABS and the Issues Around it

The Convention on Biological Diversity (CBD) objective of benefit-sharing has taken centre stage in a number of international arenas, as well as within the Convention itself. This Convention sets important new rules about the ways in which biological resources should be conserved, used and its benefits shared. It has provided renewed vigour to efforts to increase the share of benefits that poor communities receive from commercial use of their knowledge about biodiversity and biological resources (Wynberg, 2006). It is important to first explore the history of ABS and the activities that lead to the negotiations of the Nagoya Protocol on ABS. The “critical factors” one of the key objectives of this study will then make sense within this broader exploration of the history and issues surrounding ABS.

The access and benefit-sharing provisions of the CBD have caused controversial debates between developing and developed countries and among advocacy groups from indigenous and local communities to business and industry (Siebenhüner and Suplie, 2005). The positions on ‘ABS’ were and remain highly polarized. Policy makers from provider countries and many NGOs for instance view companies and researchers as ‘bio-pirates’ while members of the business community regard the CBD as an ill-structured and uninformed UN-process, governed by politicians who vastly over-estimate the value of genetic resources (ten Kate and Laird, 1999, Blais 2002; ten Kate, 2002). Siebenhüner and Suplie (2005) argue that despite this polarisation, the fair and equitable sharing of benefits from genetic resources is a global trans-national problem that requires an international response. The complexity of this international response is further confounded by the fact that the players in this policy field are from various countries with highly divergent interests ranging from development aid, commercial interests in the pharmaceutical and agro-industry, to pure research.

To understand the above situation and controversy one needs to go back to when the CBD was being negotiated. In a sense the power and interest constellation characterizing the

negotiation phase of the CBD (1989-1992) is better understood by reflecting and taking into consideration five factors as put forward by Rosendal (2006). These factors influenced the debate during the CBD negotiations and one can even go further, by saying that, it continued to influence the implementation of the CBD both at the national and international level. It can also be argued that these factors have an influence on the current negotiations for an international ABS regime under the CBD.

The factors[2] are:

1. The bulk of terrestrial species diversity is found in tropical areas around the world and these areas constitute largely the poor parts of the world (United Nations Environment Programme [UNEP], 1995 cited in Rosendal, 2006).
2. Genetic resources constitute important input factors for biotechnology and are of critical importance to agriculture, pharmaceutical, and chemical industries.
3. Several biotechnological inventions build on food and medicinal plants that originate in the South as well as on traditional knowledge about valuable properties of plants or animal products.
4. The development of modern biotechnology coincided with increased privatization of agricultural and pharmaceutical research in the 1970s.
5. The difficulty of providing similar legal protection to traditional knowledge.

The combination of these five factors contributed to the awareness of an existing imbalance between users and providers of genetic resources. They further provide the background for the developing countries' claim for national sovereignty over access to genetic resources. The argument goes, from their point of view that, for all practical purposes their genetic capital was still considered a Common Heritage of Mankind, freely accessed by all (Raustiala & Victor, 2004; Rosendal, 1991). Despite these and other opposing views and concerns, the CBD was adopted in 1992. The implications and underlying assumptions contained in the above factors, however, continued to permeate the debate within the CBD from both the perspective of providers and users of genetic resources, and thus shaped the future effectiveness of what is now known as the debate on Access and Benefits-sharing.

Over the years, however there has been an evolution of the debate within the CBD which led to a growing mutual understanding within the international community, governmental and non-governmental sector, that a new way of treating trade in genetic resources and for regulating

[2] Note that these are not yet the critical factors that this study is focusing but rather factors influencing the negotiation of an ABS regime as determined by Rosendal (2006)

bio-prospecting is needed (Siebenhüner and Suplie, 2005, Richerzhagen and Holm-Müller, 2005). The underlying foundation is that: in order for users to gain access to resources they must provide benefits to the provider country, including technology transfer, and, in order to receive such benefits, a provider country must facilitate access to genetic resources (ten Kate & Laird, 1999, Svarstad & Dillion, 2000; CBD, 2002, Rosendal, 2006, Kamau et al, 2011).

The Parties to the CBD spent 10 years negotiating and debating access and equity, culminating in the development of the Bonn Guidelines, that aim to provide Parties to the Convention with a set of voluntary guidelines to help them deal with this very complex issue, especially in terms of implementation. The guidelines propose a range of measures that user and provider countries should consider when implementing the CBD's ABS specifications (Bonn Guidelines, 2001).

Some of the concrete measures proposed in the guidelines are as follows:

- How to include the principles of prior informed consent (PIC) and mutually agreed terms (MAT) in bioprospecting agreements,
- How to deal with traditional knowledge (TK) on an equitable basis,
- Disclosure of holders of traditional knowledge and countries of origin in patent applications, and,
- A certification system for trade in genetic resources.

The effective implementation of the ABS provisions can be characterized as a pragmatic step-by-step approach that takes account of the existing different rationales and interests. It was, however, the view of some Parties to the Convention, especially from the developing parts of the world, that the voluntary nature of the guidelines did not foster widespread use and implementation of the guidelines. It seems that the status quo was being preferred somehow by some players. The industrialised countries, with their now well established and growing biotechnology sector, were concerned about maintaining free access to genetic resources (Rosental, 2006) and the developing countries were viewed as wanting to restrict access to genetic resources and reap significant benefits. The voluntary nature of the Bonn Guidelines did not facilitate a move forward, as not many governments were putting in place the necessary measures to implement the Bonn Guidelines and, thereby ensure effective access to genetic resources and the sharing of benefits.

A call was made for an international regime on ABS to be developed. This call became one of the political successes out of the 2002 World Summit on Sustainable Development in Johannesburg, South-Africa. This prominence given to ABS in international processes has

sparked a significant interest in the concept of ABS especially in terms of its effective implementation at the national and international levels. The argument goes: without access it is presumed that there will be fewer benefits to share. Without benefit sharing, there will be fewer resources conserved for future use. This places ABS right at the centre stage of sustainable development, not only for the developing countries, but also for developed countries. This is because it is seen as having the potential, if appropriately and effectively implemented, to provide both economic and other incentives for sustainable use, management and conservation of biodiversity. It would also, therefore, address the imbalances that have fuelled the need for the CBD itself.

The topic of ABS in terms of research is not new (Richerzhagen, 2007; Richerzhagen and Holm-Müller, 2005). A number of scholars have analyzed it from different angles. Wynberg (2006) for instance maintained that the commercialisation of Non Timber Forest Products within the frame of ABS is not a silver bullet and that different approaches to commercialisation, combined with the varied characteristics of different species, products and trade chains, yield very different environmental, social and economic outcomes. Her central thesis was that commercialisation approaches that involve partnerships between the private sector, NGOs, and producer organisation, with strong state oversight, are most likely to result in practices that are ecologically sustainable, economically efficient, socially just and pro-poor, as well as institutionally robust.

In an interesting study Siebenhüner and Suplie (2005) considered the ABS debate from an institutional learning perspective. According to them, for a process to qualify as an institutional learning process, it has to refer to a collective level that exceeds the realm of individual decision-making and renders them social. They further define institutions[3] as collectively shared norms, values and belief systems that govern the behaviour or collective actors. From this perspective the CBD, within which ABS is imbedded, makes for an interesting case of institutional learning given the fact that the Convention process is a highly dynamic one with different phases and periodic advances (Siebenhüner and Suplie, 2005). They further maintain that in addition, research and development in the field of biotechnology is developing dynamically and quite rapidly putting up new challenges for political responses. Any international agreement on ABS will, therefore, need to take account of these processes and divergent interests in its institutional design and be able to respond accordingly.

[3] They adopted the definition of institutions as used by the Science Plan of the Institutional Dimensions Project of the International Human Dimensions Programme on Global Environmental Change (IHDP, 1999)

Sampath (2005) looked at the issue of regulating bioprospecting by examining optimal property rights structures and institutional mechanisms for regulating bioprospecting for drug research. She essentially focused on contract theory, one of the central tenets of NIE. It showed that the rights exchanged are complementary at each stage of drug discovery and development of genetic resources. From this perspective the bioprospecting collaborations in several countries were examined and the work provided a critique on institutional and contractual factors that led to their failure or success. It thus provides significant insight and guidance as well as information on the issue of establishing bioprospecting programmes, agreements to regulate access and equitable benefit-sharing.

Täuber (2011) carried out an in-depth governance analysis of transactions involving genetic resources, with the aim of developing an instrument for contract standardisation for ABS under the CBD. Her work provides the starting point for developing a contract standardisation instrument in the form of menus for model contract clauses for ABS agreements. As it is common practice in empirical studies on governance decisions to take the perspective of the entity acquiring a good, service or right and to survey data only from this transaction party, her empirical work did not survey the provider perspective explicitly, which of course means that her work provides a good perspective on the state of play only from the user perspective, with regard to the implementation of ABS contracts.

1.2.2 Overview of the Critical Factors for Assessing the Effectiveness of ABS

Richerzhagen (2007) argued that despite the fact that many scholars analysed the ABS issue from various perspectives as evident from the examples above, there was still a lack of an adequate theoretical framework for the analysis of the effectiveness of the concept.

It is, therefore, she maintains, necessary to develop a new analytical framework based on insights of new institutional economic theory, but also based on findings from the case studies that she carried out during her research process. She used an approach that combined deductive and inductive reasoning processes to establish a new analytic framework for assessing the effectiveness of the implementation of ABS at national and international levels.

The new institutional economic theory was chosen because it appears the most appropriate theory. It provides suitable approaches to analyze the problems that occur during the implementation of ABS and offers adequate solutions to these problems.

According to (Richerzshagen, 2007) the effectiveness of the implementation of ABS, therefore, can be measured against the three objectives of the Convention on Biological Diversity (CBD) which are:

i) Conservation of biodiversity
ii) Facilitation of access, and,
iii) Enhancement of a fair and equitable benefit-sharing.

Within this broad view of assessing the effectiveness of the implementation of ABS, Richerzhagen (2007) argued that it can further be refined by using a method that can provide an analysis that integrates a multilevel approach by examining the implementation of the ABS concept on the national and international level. She, therefore, came up with an analytical framework within her study that is derived from the application of new institutional economics theory's major aspects to the concept of ABS.

The major aspects of new institutional economics[4] are:

i) Property rights,
ii) Bargaining solutions
iii) Transaction costs and
iv) Information asymmetries

The work of Richerzhagen (2007) thus established an analytic framework to measure the effectiveness of the ABS concept on the national and regional level. She defined the effectiveness of the implementation of ABS as the capability of ABS regime to:

i) set incentives for the sustainable use and the conservation of biodiversity,
ii) to facilitate access to plant genetic material, and,
iii) to enhance a fair and equitable benefit-sharing, which according to (Richerzhagen, 2007) also implies the prevention of the misappropriation and the unapproved use of genetic resources.

The main source of information for the study carried out by Richerzhagen (2007) was qualitative data collected through cases studies, primary and secondary literature with a focus on environmental and new institutional economics and biodiversity and biodiversity related topics.

[4] The NIE key concepts are discussed in further detail chapter 2

To enable her to measure the realization of these objectives, their determinants, and the factors, she defined a number of elements which she aptly named critical factors. She derived these factors by applying economic theory to the loss of biodiversity and the ABS concept and from the empirical findings of four ABS country case studies.

The case studies she carried out provided a comprehensive and a comparative analysis of national and regional experiences in developing and implementing ABS policies, laws, institutions and regulatory regimes. The case studies became the vehicle through which she derived the critical factors and which she used to test their feasibility by analyzing how they are shaped in a country-specific context, i.e. whether they are already addressed, and/or whether gaps still existed. The countries she used for the case studies were Costa Rica, Ethiopia and the Philippines.

From the results of their investigation Richerzhagen and Holm-Müller (2005) argued that the main objective of any ABS scheme is setting the incentives right. These can be complicated by unclear or inefficient property rights regimes, by enforcement problems due to time lags and informational asymmetries, and administrative complexity. The critical factors that Richerzhagen (2007) derived are:

i) Assigning property rights and intellectual property rights,
ii) Accounting for time lags,
iii) Political and legal security in provider countries,
iv) Information asymmetry concerning the behaviour of the investor,
v) Administrative complexity,
vi) Market Structure.

1.2.3 Assumptions about the Critical Factors

The underlying assumptions on which the critical factors are based can be seen as the following:

i) The way we deal with the critical factors will determine whether or not we are successful in regulating access to genetic resources and benefit-sharing,
ii) The critical factors provide a means to compare countries in terms of how they are dealing with the ABS issues at domestic levels,
iii) The special circumstances of each country should not have a significant influence or impact on the outcome based on the critical factors and, therefore, they provide a good basis for comparisons across countries,
iv) The critical factors are important not only at the national level but also at the international level.

1.3. RATIONALE FOR THE STUDY

There are some limitations to the work of Richerzhagen (2007) and Richerzhagen and Holm-Müller (2005), the most important being:

i) Her study covered very few countries so it is not yet clear whether her results are generally applicable to other countries,
ii) Her study was too broad for a general overview of the prevailing situations in the different countries concerned,
iii) Indicators were not identified,
iv) She may have overlooked important factors, given the fact that her work is the only study from this angle thus far.

The current study aims, therefore, to address some of these limitations; it will therefore also attempt to apply 'critical factors' to both national and international levels for the international process on ABS.

1.4 OBJECTIVES OF THE STUDY

The overall objective of this study is threefold; first it aims to confirm the critical factors in terms of their effectiveness to ABS, as well as the underlying assumptions in terms of ABS implementation at the national and international levels. It then seeks to carry out an in-depth re-consideration and analysis of, the critical factors, and lastly to develop indicators for the critical factors. This is thus another way of verifying the critical factors by means of a broad international survey. It is important to point out that the focus of the study was not to do a review of the Nagoya Protocol or domestic instruments in terms of their legal or non-legal aspects, but rather on the characteristics necessary to make implementation effective.

The study has six (6) specific objectives which are as follows:

1.4.1 Strategic Objective 1

Determine whether the assumptions on the critical factors are valid at the international level.
The research question that this objective seeks to answer is whether the assumptions regarding the critical factors are valid at all levels i.e. national and international levels.

1.4.2. Strategic Objective 2

Confirm whether the critical factors can be used as a comparison within a country to track the various changes that occur within a country in terms of dealing with ABS and what this means for a country.
The research question for this strategic objective is whether the critical factors can be used to track changes within a country. This objective will be met through a case study of Namibia to

test the assumptions on the critical factors within a country and to see whether they can indeed be used to track changes within a country.

1.4.3 Strategic Objective 3

Confirm whether the dynamism of the evolution of ABS due to internal and external factors at the national level or international levels has an impact on the critical factors,

The research question for this strategic objective is whether the internal and external factors[5] that influence change in the ABS policy arena have an impact on the critical factors. The internal and external factors have been derived from factors considered by (Siebenhüner and Suplie, 2005):

- Key Political pressure
- Changing demand levels
- New competitors
- New scientific findings
- Technology innovations
- Criticism from NGO
- Criticism from Industry
- Criticism from Media
- Criticism from Governments
- Change in legal frameworks

[5] The basis of these factors came from the work of Siebenhüner and Supplie (2005). They pointed out that these factors are political pressures, changing demand structures, new competitors, new scientific findings, technological innovations, criticisms from NGOs, other parts of industry or from media. The other two factors, namely, criticism from government and change in legal framework, were added under this study.

1.4.4 Strategic Objective 4

Confirm whether the definition of effectiveness of ABS hold true for all providers and users

The research question for addressing this strategic objective is whether the understanding of the definition of the effectiveness of an ABS system is the same for all parties involved i.e. both provider and users, or can there be a difference in understanding about the success or definition of the effectiveness of an instrument? This means: what is successful or effective from the point of view of a provider country versus a user country?

The study proceeds with the definition of effectiveness as defined by Richerzhagen (2007) as the capability of the Nagoya Protocol and domestic ABS legal instruments to do the following:

- Set incentives for the sustainable use and conservation of biodiversity
- Set incentives to facilitate access to genetic resources
- Set incentives for the assertion and recognition of rights related to genetic resources and associated traditional knowledge
- Set incentives to allow for the flow of benefits to both user and providers of genetic resources

Slight modifications have been made to the definition by Richerzhagen (2007). Her definition did not include the fourth bullet which is incentives to allow for the flow of benefits to both user and providers of genetic resources. Her definition essentially was to look at effectiveness in relation to the three objectives as set by the CBD.

1.4.5 Strategic Objective 5

Determine if organizational learning[6] or institutional learning has an impact on the development and changes on domestic legislation as well as the development of the Nagoya Protocol on ABS.

Organizational learning within an institution can be regarded as important. The study will, therefore, attempt to answer the research question through a desk study approach based on a literature review and experts interviews, as to whether organizational learning took place in the CBD during the work of the ABS working group, which had the mandate to negotiate the international regime,now known as the Nagoya Protocol. This is essential since the finalization

[6] The factors under strategic objective 5 will also be considered under this objective since these factors can also be used to assess change. According to Siebenhüner and Suplie (2005), for the study of learning processes in organizations, these external and internal influences can be highly significant.

of the negotiations of the Protocol in 2010 will herald in the implementation phase of the Protocol by the Parties to the CBD.

1.4.6 Strategic Objective 6

Develop indicators for the critical factors

The research question guiding the last strategic objective is whether good indicators exist for the critical factors at the national level. The work towards achieving strategic objective 1 to 5 generated the necessary body of knowledge by way of a desk study approach as well as through interviews, in order to develop the indicators for the critical factors. They were derived from a comprehensive and comparative in-depth analysis of available literature of national, regional and international experiences in developing and implementing ABS policies, laws, institutions and regulatory regimes with a few to determining their effectiveness. The desk study was enriched with information gathered in workshops and conferences as well as through interviews.

1.5 METHODOLOGICAL APPROACH

A suitable combination of literature review, desk studies, surveys and expert interviews was carried out to look at the s state of the art and to provide the theoretical foundation for the study and empirical work. The same approach has been used for the overall study. The literature review culminated in the critical analysis of the effectiveness of the critical factors as well as an analysis of the critical factors themselves. The review also leads directly into the development of indicators for the critical factors. Chapter 3 discusses the methodologies employed for each objective under this study in further detail.

1.6 CONTRIBUTION AND OUTLOOK

This study takes the work of Richerzhagen (2007) further. In her thesis she pointed out that a new focus has been brought into the debate on ABS in terms of addressing effective implementation of the ABS instruments at the domestic and international level. This will foster the move towards achieving the three objectives of the CBD. At the time of her work the negotiations for an international regime were ongoing in earnest. Today the Nagoya Protocol has been in place since 2010 and world governments are busy working towards its signing, ratification, accession and eventual full and effective implementation.

The players in the ABS field have not changed since the time she has finished her work. Today a significant amount of literature is being generated on the Nagoya Protocol. What is needed is action - guided by a careful design of regulation for the Nagoya Protocol. Action to see whether the architecture of the Protocol, as designed by the ABS negotiators, will stand the

test of time, or whether it will fall, rendering the Protocol useless, impractical and un-implementable.

This current study also does not have the all the answers. It simply points the way and much more work needs to be undertaken by those willing and able to continue running with the flame of hope that one day world governments, industry, civil society, research and academia and the local and indigenous communities around the world will effectively implement the provisions of the Nagoya Protocol and domestic ABS instruments, leading to the sustainable use of biodiversity and the generation of benefits, in order to flow through ABS transactions and off-set conservation.

1.7 STUDY OVERVIEW

1.7.1 Research Approach and Structure of the Thesis

This research focuses on assessing the effectiveness of instruments for Access and Benefit-Sharing (ABS) implementation both at the national (domestic ABS administrative, legal and policy measures) and at the international level (Nagoya Protocol).

This assessment here outlined, will be based on the critical factors and indicators (these are discussed in detail in chapter 1) derived for the critical factors. These critical factors were derived by Richardshagen (2007) using New Institutional Economics (NIE) as the theoretical frame.

The Nagoya Protocol (NP) on ABS was negotiated under the CBD and has now to be implemented by member States once it comes into force. Institutional learning will be explored from the point of view of effectiveness of ABS implementation post-Nagoya. The study aims to ascertain whether the organizational learning that has emerged during the long and protracted negotiation process, if any, provides for a best practice that can guide the process of implementation of the Nagoya Protocol, as well as for the development of domestic ABS instruments.

A mix of methodologies has been employed ranging from literature review, exploratory and standardized data collection and the corresponding evaluation techniques, are applied for all specific objectives. The literature review served to facilitate the choice of appropriate theories to guide and narrow down the set of variables within the frame of NIE for closer investigation.

The dissertation is structured into 9 chapters which are briefly outlined below:

Chapter 1 provides the background and problem statement for this research and introduces the research subject ‘effectiveness of ABS administrative, legal and policy measures’. This chapter thus provides the state of the art with regard to the ‘critical factors‘. It then describes the strategic objectives of the study, the methodological approach and the countribution and outlook of the study.

Chapter 2 provides the theoretical framework for the dissertation which is based on New Institutional Economics (NIE). It introduces the key concepts of NIE and their relevance to the ABS policy arena and discusses at some length the issues of effectiveness, efficiency and legitimacy in terms of ABS from the NIE perspective.

Chapter 3 As essentially effective ABS implementation means that the market of bioprospecting is regulated effectively and transactions costs are low, a review of literature on bioprospecting was carried out to look at the issues and challenges around it. This chapter therefore takes a look at the issue of Bioprospecting and its relevance to the ABS. It introduces the link between the Convention on Biological Diversity and the Nagoya Protocol on ABS. It further attempts to put the issue of market for bioprospecting into perspective as well as the link between biotechnology and bioprospecting and finally concludes with an overview of the Nagoya Protocol on ABS. The Nagoya Protocol is central to the effective implementation of domestic ABS instruments as it provides the minimum requirements and central understanding of the key concepts of ABS at the international level. Therefore, this chapter provides a brief overview of the protocol and its key elements.

Chapter 4 Serves as the main chapter for reviewing the literature neccessary for the development of the indicators for the critical factors as well as the further refinement and formulation of the existing critical factors and new critical factors. The literature review on the derivation of indicators for ABS considers the outcome of various studies that assessed the implementation of ABS instruments at the national level with the aim of identifying whether there are elements that emerge that can be used as potential indicators for the critical factors.

Chapter 5 provides the methodologies used in carrying out the empirical parts of the study. The three main methods that underlie the research component of the dissertation are provided. i.e. the literature review, exploratory investigations, and a online survey on the effectiveness of ABS from various stakeholders. A case study on Namibia was carried out to test the indicators and to validate the critical factors and their underlying assumptions. Some aspects of the methodologies for this study are presented in this section although the bulk of methodologies are dealt with in greater depth in the chapter on Namibia itself.

Chapter 6 provides the results and discussion of the international survey on the effectiveness of ABS instruments. The indicators for the respective critical factors that arose out of this study are provided and discussed. The assumptions on the critical factors are provided and confirmed as well as the internal and external factors that may potentially affect the critical factors. This chapter also provides the definition of effectiveness of ABS implementation amongst others and concludes with reccommendations.

Chapter 7 focuses on organizational or institutional learning from within the CBD negotiations towards the Nagoya Protocol on ABS. This chapter aims to provide guidance in terms of the implementation of the Nagoya Protocol at the international level, based on the institutional learning that led to the adoption of the Protocol. This is because effective implementation of the Nagoya Protocol is critical for operationalisation of the ABS framework at the National level. The indicators derived demonstrate that what will happen with regard to the implementation of the Nagoya Protocol impact on whether implementation of ABS at the national level is effective or not. Therefore, this chapter takes a critical look at ABS within the context of the CBD as an international institution and provides a new way of interaction based on institutional learning from the ABS Working Group that negotiated the Nagoya Protocol.

Chapter 8 first considers the literature review on Namibia in terms of ABS implementation. It then presents the results of the case study structured by the various phases and stakeholders. As interviewees were asked what they thought the lessons learnt were, these are also presented at the relevant sections in the results. There are no interpretative sections within the results section as they simply represent the results as they came from the interviews. The discussion is structured around the findings and interpretation of the results from the interviews by stakeholders. This is then followed by a focus on the key issues that arose for each of the critical factors in terms of ABS implementation in Namibia. It then provides an overall discussion on the findings. This chapter then concludes by considering all the key issues from the discussion and provides recommendations.

Chapter 9 Is the final chapter that attempts to pull everything together by providing over all conclusions and policy reccommendations and implications of the dissertation. The chapter concludes with discussing the limitations of the study as well as its contribution and outlook for further research.

CHAPTER 2

THEORETICAL FRAMEWORK OF THE STUDY

We live in a world of human imposed borders – political, disciplinary, and institutional.

~J. Farley

2.1 INTRODUCTION

New institutional economics uses different approaches to understand the performance of institutions (Betancourt, 2009; North 1997, Drobak and Nye 1997). Two important concepts among these are transaction costs and property rights. The principal premise is that the real cost of economic activities includes not only transformation costs but also transaction costs (Gandhi and Crase, 2009). Often, transaction costs are ignored, and when large, substantially reduce the efficiency and effectiveness of economic activities. A major effect of good institutions is to reduce transaction costs. According to North (1997), the major challenge is to evolve institutions in which:

1. The transaction costs are minimised,
2. The incentives favour cooperative solutions, in which experiences and collective learning are best utilised.

The obvious question then to ask is what is an institution? Nabli and Nugent (1989, ch. 1) answer this question in the following manner. An institution is a set of constraints which governs the behavioural relations among individuals or groups. These constraints can take the form of either rules or behavioural norms. Both formal and informal organizations fall within the definitions as well as implicit and explicit contracts and rules of conduct (Betancourt, 2009). New institutional economics, then, identifies formal institutions - which have their foundation in the laws and structures of organised society, as well as informal institutions which often spontaneously develop to address specific issues and problems in the society (Williamson 2000, Olson 2000, Picciotto 1995 cited by Gandhi and Crase, 2009).

The effort to move economics beyond the limitations of neoclassical methods and models, and the progress that is being achieved is considered as truly exciting by Joskow (2008). The founders of the International Society for New Institutional Economics (ISNIE) in 1997 were motivated by NIE according to Joskow (2008). He further maintains that the founders of ISNIE had (and have) a broad range of interests and in and approaches to economic analysis.

Nevertheless, according to Joskow (2008) they shared a common set of basic beliefs which defined the research topics they would focus upon and the research methods that they would use and sought to foster the following:

- Legal, political, social and economic institutions (‘institutions”) have important effects on economic performance. The effects of alternative public policies aimed at improving economic performance in various dimensions will vary along with the institutions that are available to respond to them.
- Institutions may be analysed using the same types of rigorous theoretical and empirical methods which have been developed in the neoclassical tradition whilst recognizing that additional tools may be useful to better understand the development and role of institutions in affecting economic performance.
- Theoretical and empirical analysis should be interactive and evolve together over time. Theory identifies relationships that may be examined empirically, whereas empirical regularities and “anomalies” raise questions about the relevance of received theory and suggest new targets of opportunity for theoretical advances.
- Interdisciplinary research may make important contributions to understanding the role of institutions and how they affect economic behaviour and performance. Contributions from history, law, psychology, anthropology, sociology, religion, environmental sciences and related disciplines may play an important role in advancing our understanding of institutions and their effects on the economy and the consequences of economic policies.
- Longer-term dynamic considerations associated with technological change, the diffusion of innovations, and the impacts of institutions on both, should play a more central role in economic analysis.
- Our understanding of institutions should be rich enough to allow us to apply economic theory and empirical knowledge to a wide range of economic, cultural and political settings: industrialised and non-industrialised countries; countries with a range of political systems, including variations of the implementation of “democracy”; countries with a range of cultural, religious, ethnic, tribal, and family traditions.
- Institutional analysis seeks to understand the role of government and political institutions in policy formation, implementation, and economic performance, but it does not itself have a political agenda.

When new institutional economist speaks of institutions they have in mind the following (Furubotn and Richter, 2005; North, 2006, Joskow, 2008, Betancourt, 2009):

i) Macro level institutions

These are humanly devised rules or 'the rules of the game'. These rules structure interactions i.e. formal and informal rules in human affairs. Examples of formal rules are constitutions, laws and property rights, whereas informal rules constitute traditions, conventions and codes of conduct.

2) Micro level institutions

These are the rules of the game or institutions of governance including markets or other modes of managing activities/transactions and seeing activities/economic activities through. We are in this paper concerned with micro level rules that govern ABS transactions.

2.2 THE RELEVANCE OF NIE FOR ABS

New Institutional Economics theory is based on the notion that there are institutions or rules that govern our behavior. These rules, therefore, govern the interactions or transactions between individuals, groups, organizations or firms. In everyday conduct we engage in transactions. If however, the transaction costs are too high, then there is no deal If the cost is appropriate, then there could be a potential deal. These transactions however are confounded and made complex by information asymmetries (i.e. in most transactions there is always one agent with more information than the other agent) which results in contractual relations amongst those engaging in transactions. It is, therefore, necessary to address all of these challenges when a need to bargain for solutions arises.

The above is relevant to the transactions that occur in bioprospecting or the ABS field and, therefore, provides the insights or perspective through which the current study explores the effectiveness of ABS instruments in terms of implementation of ABS.

As the work by Sampath (2005), Richerzhagen (2007) and Täuber (2011) has extensively explored ABS from the perspective of NIE, what is presented here is essentially a summary of the key schools of NIE that underpin the work of this current study.

The three schools of NIE that serve as the theoretical frame of this study are:

- Property Rights Theory
- Principle Agent Theory (sometimes known as the Formal Contract Theory)
- Transaction Costs Economics

The relevance and application of these three schools of NIE will be briefly explored with relation to the debate on ABS.

2.2.1 Property Rights Theory

Barzel (1989) and Eggertsson (1990) contributed useful insights on the early property rights research literature. It can be argued that through these insights Barzel (1989) came to view the existance of transaction costs as the starting point of the property rights literature. The essential question.of 'Who owns what?' Has shaped human history since time immemorial (Furubotn and Richter, 2005 p. 79). Property rights are the right to consume, obtain income from, and alienate (sell) an asset (Barzel 1989). These rights are difficult to delineate because transactions are costly.

The transaction costs identified by Barzel (1989) are those associated with the transfer, capture and protection of property rights. What underlies the costliness of transactions is that commodities have many attributes that vary from one item to another (Betancourt, 2009). This allows wealth to spill over into the public domain in every exchange and provides individuals with an incentive to spend resources in capturing this spill over. As a result, divided ownership of commodities yields increased gains from exchange by allowing transfers of subsets of attributes. Restrictions that enhance the separation of individual rights also enhance the gains resulting from exchange by allowing the existence of divided ownership. The latter, in turn, diminishes the attributes that remain in the public domain, and thus economizes on resources that would be spent on wealth capture.

The relevance of the above is that an underlying principle in Barzel's analysis is that individuals attempt to maximise their wealth. Thus the central issue of whether ownership should be private (individual) or social (collective), was and is a hotly debated issue that has contributed to the enormous bloodshed of the twentieth century (Furubotn and Richter, 2005 p.79). This struggle still continues today in various guises.

Table 2.1 summarises the issues that arise from NIE with regard to property rights and their relevance to ABS. It is clear that the issue of ownership is also crucial in the ABS policy arena. This is demonstrated through the concepts used that try to capture ownership of genetic resources e.g. country of origin, provider country and user countries. This issue is complicated by the linking of genetic resources utilisation to traditional knowledge, thus bringing in the intellectual property rights dimensionas well.. As genetic resources move up the value chain through value addition, the intellectual property that is generated significantly increases the value of that genetic resource. The issue of ownership in the ABS sector is further complicated by the prevalence of materials accessed before the CBD came into force. Materials contained in the deep sea bed and in the Antarctic, particularly so, as some view these materials as being

collectively owned by humanity. The question thus arises whether morally the benefits derived from such material should, therefore, also be shared with humanity.

Table 2.1 Property Rights Theory and its relevance to ABS

1. PROPERTY RIGHTS THEORY	NIE	Perspective on ABS
Property Rights (Institutional Environment analysis)	a) The economic property rights of an individual; ability to consume a good or the service of an asset directly or to consume it indirectly through exchange. (1) the right to use an asset, (2) the right to earn income from an asset and contract over the terms with other individuals, and (3) the right to transfer ownership rights permanently to another party. b) The legal property rights are the property rights that are recognized and enforced by the government.	In the ABS game, which player has the right to consume the goods or services i.e. the right to grant access to a the genetic resource and/or the associated traditional knowledge b) who confer the property rights the government (provider /user) or the international community of governments? Where does that leave the local and indigenous community?
Commons	A scarce resource used in common, from which it is not feasible to exclude potential beneficiaries from using or consuming it, and for which each actor's use or consumption of it subtracts from its availability to others	Some aspect of TK applies to this issue as well as genetic resources in the high seas, deep seabed genetic resources and the Antarctic as well as trans boundary genetic resources and TK
Social Capital	Features of social organizations, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions.	In ABS the transaction is fraud by serious distrust amongst the players for various reasons. This will have implication for the costs of the transactions, the enforcement and compliance of all players in the game

Source Own, based on Holm-Müller and Täuber (2010), Kleinaltenkamp, 1993, p 85; North, 1992, p, 32; Ricther and Furubotn, 1996, p, 292;), Ricther and Furubotn, 1996 Visser et al., 2000, p. 8, Williamson 1991 reffering to McNeil 1974; Masten and Sausier, 2000, Sampath 2005, Holm-Müller et al, 2005, OECD 2003, Richerzhagen 2007) Benham (2013); , North 1990, Rai 2001:5 IPR cited in Sampath

2.2.2 Principal Agent Theory (Formal Contract Theory)

According to Furubotn and Richter (2005), people in modern society operate within a social network of legally binding and legally nonbinding obligations into which they enter either voluntarily or through compulsion. The relevance to the ABS perspective is that in ABS transactions, legally binding contractual obligations occur relating to the transfer of property rights with respect to genetic resources and traditional knowledge. Contractual obligations can

be prepared, concluded, and excercised within various institutional frameworks. Transaction costs play a major role in any exchange process. Amongst the most important economic challenges that arise because of transaction costs, and because of the passage of time between the formation of a contract and its performance, are those associated with asymetric information and transaction-specific investments (Furubotn and Richter, 2005). The problems that arise due to the two challenges can manifest both before and after the conclusion of a contract, causing ex-ante and ex-post transaction costs. Essentially contracts need to mitigate the allocation of the risk of contingencies.

In most economic transactional relationships there are two economic actors present: the principal and the agent (Furubotn and Richter, 2005). The principal engages the agent to perform some service on his behalf, and to facilitate the achievement of the activity he delegates some decision-making authority to the agent. This relationship is characterised by the information asymetries after their contract has been finalised in three ways:

1) The agent's action is not directly observable by the principal,
2) The agent has made some observations that the principal has not made,
3) It is too costly for the principal to either directly monitor the agent's actions or acquire full knowledge of the agent's unique observational information. In NIE these are understood as hidden action and hidden information; both are assumptions of moral hazzard.

Within the nature of transactions, it can be assumed that the agent will not always act in the best interest of the principal and, therefore, there is a need to design contract options that seek to ensure that the agent works in the best interest of the principal. In so doing, opportunistic behaviour is minimised.

Table 2.2 below considers formal contract theory and its application to ABS. Based on the above explanation, the challenge is to design ABS contracts and legal instruments that provide incentives for the bioprospecting market to operate efficiently, whilst making sure that opportunistic behavior and information assymetries are addressed and that the parties comply with their contractual obligations within the governance structure.
To consider the various parties that have contractual obligations in the ABS policy arena it is useful to know who the players are within that system. The organisations issues depicted in Table 2.2.

Table 2.2 Principal Agent Theory (formal contract theory) and its relevance to ABS

PRINCIPAL AGENT THEORY (FORMAL CONTRACT THEORY)	NIE	**Perspective on ABS**
Principal agent relations	Consider only formal contracts as a governance form Function to transfer risk and align incentives to overcome problems of information asymmetry Relational contracts view governance as relations rather than discrete transactions	The following relations are seen with ABS: Firms seeking access vs National Access Authority (quantity of Genetic Resources (GR) and quality of GR and Traditional Knowledge (GR) Access Authority VS Local and Indigenous Communities (ILC's) whom they seek to represent Access Authority VS Firm in ex post stages (Research & Development (R&D) progress, systematic interest not to reveal)
Governance Structure	The system of rules plus the instruments that serve to enforce the rules.	In the ABS system of rules, the contractual framework and the instruments that enforce the rules within which the exchange of genetic resources and traditional knowledge is located
Governance structure analysis	There are complete and incomplete contracts	Pre-contractual opportunism i.e. misrepresentation of value and quality of both samples of GR and goals of R&D Post-contractual opportunism between parties i.e. monitoring relations Ex-post asset specificity due to legal uncertainty and imperfect enforcement issues
Contracts	A legally enforceable agreement which is a formal, legal commitment to which each party gives express (though not necessarily written) approval and to which a particular body of law applies	The bioprospecting market is characterized by imperfections and uncertainty. Therefore, even if rational behavior was possible from the players in the game the information about the future is uncertain and there are needs contracts must address:
Types of risk of agents	Risk averse- certain income vs and uncertain income Risk-neutral – indifferent to all alternatives with same expected value Risk loving – uncertain value preferred to a certain value of the same expected value	These risks are present in the ABS system Risk Averse- Collectors and intermediaries of GR and TK (ILC) National competent authority

Opportunistic behavior	In the game some agents may be self seeking with guile and therefore refuse to give important information or even give false information when they know the other party cannot verify it	In the ABS games this opportunistic behavior is very much relevant and it is therefore imperative for mutually beneficial exchange rules to be present although it is fraught with the challenge of dealing with public goods, trading in information and using complex contracts to capture those rules to provide disincentives for opportunistic behavior
Organization	A group of individuals bound by some common purpose to achieve objectives. Organizations include political bodies	Who are the stakeholders in the ABS system? Providers/User/Indigenous and local communities and the industry

Source Own, based on Holm-Müller and Sauber (2010), Kleinaltenkamp, 1993, p 85; North, 1992, p, 32; Ricther and Furubotn, 1996, p, 292;), Ricther and Furubotn, 1996 Visser et al., 2000, p. 8, Williamson 1991 reffering to McNeil 1974; Masten and Sausier, 2000, Sampath 2005, Holm-Müller et al, 2005, OECD 2003, Richerzhagen 2007) Benham (2013); , North 1990, Rai 2001:5 IPR cited in Sampath

It was necessary to consider governance as pertaining to ABS. Because the literature review on governance and ABS did not deliver much, the research expanded to other natural resources. The water sector has been studied relatively well with regard to institutional and governance issues. It was found that within these issues there are insights that are relevant and useful to the effective implementation of domestic ABS issues. Of particular interest was the work by Gandhi and Crase (2009) on governance and the performance of water institutions in India. They cite characteristics of effective water management institutions as determined by Pagan 2003 cited by Gandhi and Crase (2009) which are as follows:

1. Clear objectives: Good institutions show clear objectives and clarity of purpose. Clear objectives and their acceptance among stakeholders result in less conflict, greater congruence and lower transaction cost.
2. Good interaction: Good institutions show good internal interaction, bringing formal and informal rules together. This helps reduce transaction costs and promotes cooperative solutions. There is also good interaction with other institutions so that external transaction costs are reduced.
3. Adaptiveness: Facing change and variation in their internal and external environments, successful institutions demonstrate adaptiveness. Through this the institutions can sustain and grow while maintaining lowtransaction costs.
4. Appropriateness of Scale: Good institutions have the appropriate scale of size and scope. If too large, their transaction costs are too high. If too small, they have little control over their affairs and high internal transaction costs.

5. Compliance ability: Good institutions show ability to bring compliance. If the rules and processes of the institutions are not followed by large numbers, the institutions cease to be meaningful, and transaction costs become too high.

According to Gandhi and Crase (2009), good governance in organizations/institutions address at least three important rationalities:

1. Technical Rationality: Dealing with efficiency: Good institutions achieve efficient conversion of inputs into outputs. This requires good/appropriate technology and productive efficiency.
2. Organizational Rationality: Dealing with coordination: Division of labour and specialisation for efficiency leads to a large number of activities. The effective coordination across these activities becomes crucial for overall institutional performance.
3. Political rationality: Dealing with justice: Most large institutions require substantial human/people interaction and involvement. In this, addressing of issues/perceptions of fairness and justice becomes very important for sustainability and performance.

Where the rules of the organisation are rigid, chances of success are significantly reduced. Clear mechanisms for changing the rules and the authority to change the rules leads to greater success (Gandhi and Crase, 2009). Appropriate scale and systems of the institutions lead to substantially greater success in institutions. Where members are willing to follow rules of the organization, the chances of success are substantially increased. Where compliance to the rules is sufficient, the performance is better.
If the organization pursues plans to achieve objectives, the success is significantly improved. If the organisation has been created by the government and the rules are determined by the government the chances of success are indicated to be significantly reduced (Gandhi and Crase, 2009). Where the institution uses its powers to bring compliance, the chances of success are significantly better.

Using these insights for ABS we can state that, in order to ensure that benefits flow to all stakeholders it is important to have rules in place for equitable sharing of benefits derived from ABS. This is positively associated with clear organisational objectives, good interaction between parties, or stakeholders, and the relevant institution using its power to assure compliance in generating and sharing benefits. In general, however, this process seems to be found to be negatively associated with the creation of an institution by the government. This may be a challenge since most of the institutions for the regulation of ABS will be established by governments. Although there is this negative correlation when the organization is created by the government, it has been found that when the rules were determined by the government

this has a positive impact on equity. Government, thus, has a notable role to play in achieving better equity amongst the various players.

These insights are indeed very important for the effective implementation of ABS at the national level since the issues of clear objectives, compliance, coordination, efficiency and justice all come into play in the ABS debate, and more so at the implementation and concrete action level.

2.2.3 Transaction Costs Economics

As we saw in the discussion of formal contract theory, contractual obligations lead to transaction costs. Transaction costs are clearly relevant for the analysis of institutions. First, the constraints that evolve in the operation of economic systems can be viewed as institutions designed to accommodate one or more of these costs (Betancourt, 1992). Indeed, a classical contribution to this field, Coase (1937), argues that the existence of firms as organizations or economic institutions is due to their function as a mechanism for lowering transaction costs incurred by participating in the market exchange. Moreover he argues that the boundary between firms and markets is determined by the minimization of transaction costs.

Table 2.3 presents an overview of the main concepts of the transaction costs economics school and their relevance or application to ABS. In essence the table depicts that in any ABS transaction there is an exchange of genetic resources and/or related traditional knowledge. This transaction will involve a certain amount of cost and will also be plagued by information asymmetry that may exist between the two agents engaging in the transaction.

Table 2.3 Transaction costs economics and its relevance to ABS

TRANSACTION – COST ECONOMICS	NIE	Perspective on ABS
Transaction **(governance structure analysis)**	A transaction occurs when a good or service is transferred across a technologically separable interface.	The ABS transaction involves the transfer of Genetic Resources and or Traditional Knowledge
Transaction Costs	The costs of resources utilized for the creation, maintenance, use, and change of institutions and organizations	If the cost in the ABS transaction amongst the players based on the rules are too high there may be no game or vice versa (see table 3 for ABS related transaction costs)

Information Asymmetry	One agent in many transactions may have more information or better information than the other agent. The presence of private information leads to incentive constraints and the need for mechanisms to enable contractual relations: These are: Moral Hazards – Hidden Action Adverse selection Hidden information; to address this there is need for screening, signaling and reputational effects	In ABS transactions information asymmetry is prevalent and adverse selection occurs: There are: Uncertain product quality Parties use intermediaries which lead to reputational effects There are spot markets There is hidden knowledge (uncertain product quality and the market for TK related information)

Source Own, based on Holm-Müller and Täuber (2010), Kleinaltenkamp, 1993, p 85; North, 1992, p, 32; Richter and Furubotn, 1996, p, 292;), Richter and Furubotn, 1996 Visser et al., 2000, p. 8, Williamson 1991 reffering to McNeil 1974; Masten and Sausier, 2000, Sampath 2005, Holm-Müller et al, 2005, OECD 2003, Richerzhagen 2007) Benham (2013); , North 1990, Rai 2001:5 IPR cited in Sampath

Täuber (2011) has comprehensively described the costs involved in ABS transactions. This is summarised in Table 2.4 below which has been enhanced with additional insights from other literature sources**.** The essential message for ABS transactions is that the transaction costs within the ABS markets and its regulatory frameworks both at the national and international levels will have a significant influence on the effectiveness of ABS transactions and the willingness of actors to initiate and follow through with ABS transactions. If the various categories of transaction costs, as outlined in the table below, are too high then this may complicate effective ABS implementation as many of the different stakeholders e.g. the private sector and research and academia, may not engage in the market. Therefore, no benefits will be generated and thus no sharing of benefits.

Table 2.4 Forms of transaction costs according to basic literature, supplemented with findings from access and benefit-research

Forms of transaction costs	**Examples of transactions cost in the ABS process causing transaction cost**
Search and identification costs **Minimizing bureaucratic costs of access**	• Identification of the potential providers and users • Identification of supply/request (what exactly does the provider supply and what exactly does the target group demand) • Identification of the required genetic resource or the traditional knowledge • Screening for reliability (providers/users) • Identification of competent authority for ABS negotiations (State, Indigenous and local communities, private persons)
Negotiation and bargaining costs Decision costs Agreement costs	• Negotiation of contract: ✓ (PIC, MAT – Scope of access rights, ✓ time frames and time to benefits, ✓ benefit-sharing obligations and mechanisms ✓ Intellectual property and property rights • Evaluation of offer/request o Assessment of resource/information quality o Assessment of rights o Assessment of possible benefits
Monitoring and enforcement costs	• Legal verification of the contract • Monitoring / verification of misconduct of the other contracting party o User: Acquisition, utilization, transfer, commercialization o Provider: Agreed on items of supply such as quality, knowledge and exclusivity of supply of genetic resources and related knowledge
Adjustment costs	Renegotiation of the contract
Enforcement costs Finishing costs	• Dispute settlement • Sanctioning /remedies

Source: Holm-Müller and Täuber (2010) based on finding from Kleinaltenkamp, 1993, p 85; North, 1992, p, 32; Ricther and Furubotn, 1996, p, 292; Sampath, 2005; Visser et al., 2000, p. 8.

2.2.4 Social Capital and its Relevance to ABS

In the search for insights on effective implementation for ABS, the NIE literature provided additional clarity through the concepts: organization and social capital. NIE defines social capital as the glue that holds society together. Aspects of NIE literature also include the concept of trust as an essential part of such social capital, and provides legitimacy (Lieberherr, 2009; Menard and Shirley, 2005). NIE theorists have found that repeated behaviour leads to embedded institutions of customs and norms that become legitimate as human actors trust and thus consent to the rules attached to such behaviour (Menard and Shirley, 2005; Hodgson, 2006).

Trust can also be seen as helping to offset transaction costs. Because it applies to all modes of coordination trust can assist in minimizing transaction costs in any exchange (Lieberherr, 2009). The issue of distrust and hence the need for cooperation to achieve enforcement also comes to the fore (Menard, 2000; Greif, 2005). The above considerations on trust or social capital are very relevant to the issue of ABS, because as distrust builds up over years any new institutions that are to govern ABS will have to take this into cognisance if transaction costs are to be minimized.

Social capital then, in the ABS policy arena, refers to the presence of networks and connections within the ABS market. It also includes the presence of relations of trust and mutual support, formal and informal groups, common rules and sanctions, collective representation, mechanisms for participation in decision-making and the presence of effective leadership within the ABS sector.

Indirectly the critical factors when addressed effectively and thus assuring an effective regime at both national and international levels, will contribute to trust developing amongst and between the various stakeholders in ABS transaction. This can also help deal with the Principal-Agent problems caused by information asymmetry between the parties.

The issue of trust can be considered from a number of viewpoints; trust between contracting parties of the CBD that ABS agreements and implementation are being undertaken in accordance with the provision of the CBD and the Protocol (IR). Trust between provider and user countries that access has been granted on mutually agreed terms and that the sharing of benefits has been equitable. Trust between the indigenous and local communities and the industry or their own governments that the local institutions will be respected, that the consent given and the mutually agreed terms agreed to will be honoured, and that benefits will indeed accrue to them should there be benefits generated monetary and otherwise.

The issue of trust then can apply to all modes of coordination, cooperation, interaction, reputation, signalling, monitoring and compliance as combined with contracts; it can assist in minimizing transaction costs in any exchange. Moreover, companies are increasingly developing best practice standards associated with biotrade, and seeing this as an extension of ethical trading, good business practice and social responsibility, rather than only for purposes of compliance with the CBD (Laird and Wynberg, 2008; Union for Ethical Biotrade, 2007)

2.2.5 Effectiveness and Efficiency of ABS Instruments from an NIE Perspective

Since the study is assessing the effectiveness of the implementation ABS instruments, and the critical factors themselves were derived to assess the effectiveness of ABS instruments, it was found necessary to look at the concept of effectiveness itself to provide insights as to what effectiveness means from a NIE theory perspective and to see how it can assist with the development of the indicators for the respective critical factors.

According to Lieberherr (2009) effectiveness is the most difficult concept/criterion/element to decipher in NIE theory. Complications with this term arise due to the fact that it is often intertwined with the efficiency concept in NIE literature (Furubon and Richter, 2005). Effectiveness through the perspective of NIE may be perceived as an outcome of efficiency as NIE theorists utilise this criterion to refer to offsetting transaction costs. For example, an economic exchange is described as being effective if the transaction is conducted in the most efficient way (i.e. transaction costs are eliminated as much as possible). Hence it can be argued that economic exchanges are made more effective by rational individuals choosing the best feasible or most efficient outcome (Greif, 2005).

Effectiveness is also used in NIE theory in relation to the presence of institutions which act to coerce, restrain and enforce contracts, thus serving to enhance economic performance and support economic exchanges as well as ensuring the enforceability of such exchanges. NIE does note that in order to provide legitimacy, these institutions must be effective, which can only be achieved when agency problems, such as judicial bias or governmental corruption, opportunistic behaviour of the agent (e.g. a private contractor) are counteracted by coercion controlling institutions (Lieberherr, 2009). These are all relevant to the ABS policy formulation and subsequent implementation. Furthermore, effectiveness and authority are linked, since the authority of enforcing institutions are described as being effective when they are backed by the ‘authority of the state’ (Greif 2005: 737). This is exactly what the Nagoya Protocol on ABS is seeking to achieve in terms of implementation. The authority of States or parties to the

Protocol as well as the different ABS policy, legal, administrative and regulatory measures at the domestic level, will provide this backing to the efficient economic exchange between providers and users and ensure that benefits are also flowing in return for this efficiency.

Effectiveness then, provides more insight into implementing efficiency at the broader institutional environment level; it further also elucidates the issue of enforceability that is central to NIE. The institutional environment is what will determine the effectiveness of a system. The players in that system will play by the rules to achieve their objective in the ABS, the reduction of transaction costs as the final outcome that will determine whether access is granted and benefits are generated. It is important to note that the reduction of transaction costs is not an aim by itself. It is a necessary condition for exchange to take place.

Table 2.5 Summary of effectiveness from an NIE perspective

Definition	Mode/Level	Mechanism	Indicator	Explanation	Outcomes
Effectiveness Existence of best feasible outcomes (i.e. the most efficient institutions that make contracts more enforceable	Institutional environment	Rational choice	Best feasible alternative	Rational individuals choose the most efficient outcomes	Reduction of transaction costs
		Contract law Property rights Separation of power	Enforceability	Contracts are made enforceable via contract enforcing (i.e. legal or regulatory) & coercion restraining institutions	

Source: Lieberherr (2009)

2.2.6 Efficiency and its Relevance to ABS

The previous section outlined the close link between the concepts effectiveness and efficiency and warrants further exploration as to its linkages to ABS.

According to Lieberherr (2009) NIE operates on the premise that efficient economic coordination stems from aligning multiple imperfect contractual and institutional arrangements to find the most appropriate means to conduct an exchange, which should minimise transaction costs as much as possible (Brousseau and Glachant, 2002). Hence efficiency can be defined as perceived net benefits provided by one institutional arrangement in relation to another.

These definitions of efficiency are not equivalent, but are all encompassed by the idea that nothing more can be achieved given the resources available. Within the ABS sector efficiency

could, therefore, be described as an exchange of genetic resources and the sharing of benefits which takes place at the lowest possible transaction cost. This then translates into the generation of benefits to both the provider and user of the resources, as well as all other actors that were involved in this transaction, such as indigenous and local community. The procedures that will govern these transactions must, therefore, provide incentives for the various stakeholders to engage and meet the three efficiency criterion above. The design and implementation of the various domestic frameworks must ensure that the structure in and of itself should not stifle efficiency in the sector, thus becoming a barrier to the effective flow of transactions.

2.2.7 Legitimacy and ABS

While at first NIE does not seem to address the issue of legitimacy, the theory does touch on consent, constraint, as well as controlling power and trust. These three elements can be considered as indicators of legitimacy (Lieberherr, 2009). They are linked to the concept of social capital and also have some relevance to the Principal Agent Theory and Contract Theory as it relates to ABS. Another way of looking at this concept is its link to governance structures as well as the legitimacy of enforcing contract, the legitimacy of exchanging goods and thus transactions.

However, despite some indicators that NIE takes into account, it seems that even while addressing the issues related to this issue of legitimacy, and the logic of NIE, theorists often seem to come back to the efficiency criterion (and the underlying motive of minimizing transaction costs) or they outsource the problem to political science (Lieberherr, 2009 and Furubon and Richter, 2005).

2.2.8 Legitimizing Authority at the level of Governance

The question here is why human actors consent to authority of an employer (i.e. the visible hand) rather than maintaining their freedom under the invisible hand of the market (Menard and Shirley, 2005). Since consent has been established as a basic characteristic of political legitimacy and moral action (Peter, 2004), by addressing this issue NIE theorists touch on the question of legitimacy.

It must be noted though that focusing on the human actors' set of choices, which can be legitimized through their freedom to consent to an alternative, does not provide insight into the institutional constraints under which these actors must make decisions (Peter, 2004). NIE takes institutional environment into consideration which explains whether the constraints placed on humans provide them with enough freedom to choose from attractive alternatives or

whether they are coerced into unattractive options due to their institutional environment. In other words, whether the choices provided are legitimate or not.

The issue of legitimacy has implications for ABS in that implementation will require knowledge of political and market forces. Success may depend on whether the market will determine the choices made by the players or whether political imperatives will determine the choice. It also will have implications in terms of ownership rights, legal clarity and certainty. Since legal frameworks to assure legitimacy of contracts are still, too often, subject to interpretation at the national level, choice may be a principle determinant of the outcome of influencing factors. The challenge will be whether those with power will be more accountable to those they control by employing consent (Liebenherr, 2009). This will be true for both provider and user governments.

2.2.9 Legitimizing Coercive Power at the Level of Institutional Environment

On the broader level of the institutional environment, the NIE theorist does acknowledge the need to constrain coercive power. Restraining power is often linked to the issue of legitimacy (particularly in political science) because in order for powerful entities, such as governments, to function properly they need to be accepted by those they affect (Peter, 2004; Menard and Shirley, 2005). This issue is also linked to market mechanisms as they may wield coercive power and hence should be validated. ABS policy, legal and administrative frameworks will be designed by the powerful entities and implemented by them. The challenge is whether the powerful, in implementing these instruments, will have regard for the views of those they affect and whether those they affect will accept these instruments and use them in order to achieve what they were meant to ensure i.e. efficient and functional implementation that reduces transaction costs. It is important to point out that coercive power can be used to forbid something but it cannot be used to force anyone to do something e.g. to engage in research, or enter into a contract etc.

Consent is important for legitimacy in the implementation of ABS legal and policy frameworks. The Nagoya Protocol is built upon the principle of Prior Informed Consent[7] (PIC) this implies that PIC coupled with trust will contribute greatly to the effective implementation of the Nagoya

[7] Prior Informed Consent (PIC) refers to the principle that in transactions where genetic resources and/or traditional knowledge is accessed such access must be based on the prior informed consent of the owners and holders of such genetic resources and traditional knowledge. This must further occur on the basis of Mutually Agreed Terms (MAT) between those who are accessing and those who are granting access.

Protocol and domestic ABS frameworks. The willingness to cooperate, and accepting the rules and conditions, has clear relevance to ABS and PIC and Mutually Agreed Terms (MAT).

It seems then what is emerging from the literature on NIE and its relevance to ABS is that we can view ABS implementation as effective when it reduces transaction costs and, therefore facilitates appropriate incentives to allow for these transactions to materialise. According to Richerzhagen (2005, 2007) this is only the first step. There is a need to ensure that the transaction does take place. It is important, though it may not help in achieving the other goals such as equitable benefit-sharing. Such transaction must of course meet the core demands of ABS access transactions as determined by the CBD and the Nagoya Protocol i.e. PIC, MAT and Benefit-sharing. The issue of trust is also emerging and is also further emphasized under legitimacy. Table 2.5 indicates that trust facilitates exchange and reduces transaction cost. This is clearly important because once PIC and MAT have been granted, the first hurdle for exchange has been passed and the transaction i.e. the exchange of genetic resources, can occur, and then facilitate the flow of the appropriate benefits.

Since essentially ABS will require the setting up of governance structures at both the national and international levels, the principal challenge will include whether these will be accepted or whether players would need to be coerced into accepting these governance structures that will bring about new ways of conducting transactions. This calls therefore for measures to build trust amongst the different players that hopefully can create a level playing field through addressing information asymmetries and reducing transaction costs in the ABS field.

CHAPTER 3

LITERATURE REVIEW: BIOPROSPECTING THE ISSUES

There seems to be some perverse human characteristic that likes to make easy things difficult. ~ ***Warren Buffett***

3.1 INTRODUCTION

The particular field of applied biology today known as bioprospecting is central to the issue of Access and Benefit Sharing (ABS). The questions around ABS have led to the entire controversy and intricacies around the regulation of access to genetic resources, the associated traditional knowledge, and the sharing of the resultant benefits. It is, therefore, important to explore this issue as part of an attempt to generate indicators for the effective implementation of ABS policy, together with its legal administrative and regulatory frameworks.

Bioprospecting can be defined as the purposeful search for, and evaluation of, wild biological material, in the pursuit of interesting valuable new products or bio-molecules (Laird and Wynberg, 2003) which may have potential for commercial application. It includes the collection, from local communities, of traditional knowledge relating to the use of these resources.

A term that has become associated with bioprospecting is “biopiracy”, which essentially refers to a situation wherein biodiversity or knowledge about biodiversity is collected without permission from the owners of these resources, and is then patented (Laird and Wynberg, 2003).

Bioprospecting has always been a central activity in human development. The earliest known record of bioprospecting is found in Egypt were Queen Haspetuth commissioned a search for interesting bio-materials in ancient times. She sent a team of collectors to the land of Punt, which is today the area near Eritrea, north-eastern Sudan and Ethiopia (Van der Walt, 2005 and Wynberg et al, 2009).

In its modern form bioprospecting involves the application of advanced technologies to develop new pharmaceuticals, agrochemicals, cosmetics, flavourings, fragrances, industrial enzymes, and other products from biodiversity. Until recently organizations that engaged in bioprospecting were under no obligation to compensate countries from which the biological

materials had been collected (Artuso, 2002). With the entry into force of the Convention on Biological Diversity (CBD), open access to biological resources was replaced by a recognition of the sovereign rights of each country to control access to the biodiversity existing within its borders.

While research into the potential of such products has developed at great speed, awareness by local communities and governments of the earning potential in the areas of biodiversity has grown. Recognition of the need for control in this economic field has led to greater protectionism. However, notwithstanding the fact that such research may lead to commercial application in the future, it is important that fear of bioprospecting should not stifle academic or conservation research. Care must also be taken that the commercial use of natural resources especially the trade in commodities (biotrade) should not be negatively affected (Laird and Wyberg, 2003), particularly since biotrade represents a natural feature of local economies and is vital to the livelihood security of many communities around the world.

Furthermore, bioprospecting itself refers to a small group of activities undertaken by a small number of commercial sectors. As a result, and because bioprospecting usually involves taking small samples or materials, its impact on the environment is much less than many other more destructive practices – such as large scale clearing for commercial agriculture, or unsustainable logging (Laird and Wynberg, 2003). The fact that the sample size is small makes the transboundary movement of samples for bioprospecting relatively easy today. With the development of this area of research and the great potential it holds for economic development, often in underprivileged communities, incentives must be put in place to minimise and/or regulate bioprospecting to ensure that it is done ethically. In other words, that it is sustainable, fair, (Laird and Wynberg, 2003) and results in benefits for both the provider and the user, as well as for biodiversity in general.

3.2 BIOPROSPECTOR DEFINED

Polski (2005) analyzed the economic and policy issues connected with collecting biological materials and using them in biomedical applications. She identified essentially three types of bioprospectors: - Knowledge Creators (Shamans, teachers, and scientists); Entrepreneurs (Farmers, vendors, and biotechnologists) and Collectors.

This categorization is very useful as it highlights the need for ABS domestic frameworks to cater for a wide range of bioprospectors, some who will be from within a given country and some who will be from outside of the country.

The Knowledge Creators, Polski (2005 p. 547) maintains, generally prospect to advance knowledge and in the process create new knowledge, products, processes, or applications. They can also create profitable products and add to collections of genetic resources. The Entrepreneurs on the other hand, bioprospect for business.. These may be small, medium, or large scale enterprises organised inside or outside the country in which the resources are located. Their primary interests are often to survive and develop profitable products. In this manner they may also advance knowledge, solve problems, and develop new processes and applications. Collectors essentially harvest specimens to expand their own collection or to sell to others. Their activity has a single and relatively static economic dimension – the harvesting of Non-Human Biological Materials (NHBM[8]) for immediate consumption. As such, Knowledge Creators and Entrepreneurs are multi-dimensional, involving both static and dynamic economic activities (Polski, 2005 p. 547). The material they harvest has a known, specific use, so that it is relatively easy to calculate the value of this type of bioprospecting as well as to design incentives to protect biodiversity in this regard.

From the above description it follows that these three categories can represent a wide range of industries ranging from pharmaceutical, seed, crop protection, cosmetic and personal care, botanical medicine, biotechnology and horticulture industries (Laird and Wyberg, 2003)

It is generally perceived that the challenge is regulating only the big multi-national companies but this perspective which recognises the wide economic potential of the products collected, begs otherwise. Perhaps the intermediaries who may fall under the category called ‘Collectors’ may pose an even greater challenge than the multi-national company since they are small, may not suffer significantly from reputational effects, and are often on the ethical borderline of the issue (Sampath, 2005).

3.3 INTERNATIONAL RESPONSE TO REGULATE ABS: THE CBD AND THE NAGOYA PROTOCOL ON ABS

As the issue of unregulated access to genetic resources and traditional knowledge continued unabated in 1992 the international response was ushered in by the Convention on Biological

[8] According to Polski (2005 p. 545) the CBD defines biological diversity to include “all aspects of variability evident within the living world, including diversity within and between individuals, populations, species, communities, and ecosystems.” She maintains that this is a very broad definition that potentially includes all nonhuman biological materials (NHBMs) as well as all human biological materials (HBMs) in the world as we know it at a given time

Diversity (CBD) by introducing global new rules to govern the players in the biodiversity conservation and use arena. In accordance with the CBD bioprospecting, organizations are now expected to share the benefits and transfer of technology in exchange for access to biochemical resources (Artuso, 2002). Transactions for genetic resources are to be underpinned by a *quid pro quo:* access to genetic resources in return for a share of the benefits derived from their use (Glowka, 2001).

Many countries, especially developing countries, in response to this provision started the process of drafting legislation to ensure access to genetic resources and the sharing of resultant benefits (Glowka, 2001). As biological material is transboundary, supra-national legislation on ABS also started to see the light in some countries, particularly in Asia and South-America. An attempt was made by the African group of countries through the development of the OAU model law for the protection of community rights which was proposed as a *sui-generis* legislation.

There is a wide divergence of views on what constitutes fair and equitable sharing of benefits and how best to promote it as well as its implementation on the ground. This led to the formulation and subsequent adoption of the Bonn Guidelines (UNEP, 2002) in an attempt to put in place voluntary measures for implementing this provision. This response by the global community however did not suffice since these guidelines were voluntary. In 2002 during the World Summit on Sustainable Development in South Africa a further global call was made to negotiate an international regime that can regulate access to genetic resources and associated traditional knowledge. This call led to the negotiation and development of the Nagoya Protocol on access to genetic resources which was briefly discussed in Chapter 3.

One source of continued misunderstanding is the disparity between the market value of products derived from biological resources and the compensation provided for the raw materials themselves. According to Simpson *et al* (1996) the demand curve for biological samples is like all other goods - downwards sloping. Given this basic economic fact the market price for randomly collected biological samples is likely to be little more than the cost of collecting them.

3.4 THE MARKET FOR BIOPROSPECTING

The market for bioprospecting is another area that has received increasing attention as attempts to understand the markets and the transactions that occur around bioprospecting have increased. A model involving monopolistic competition for a differentiated product more

accurately reflects the complex reality of the market for biological samples, extracts and derivative products (Artuso, 1997b).
According to Robinson (1933) monopolistically competitive markets have the following characteristics:

- There are many producers and many consumers in the market, and no business has total control over the market price.
- Consumers perceive that there are non-price differences among the competitors' products.
- Producers have a degree of control over the price.

The above characteristics support the claim by Artuso (1997b) about the nature of the bioprospecting market. There are many producers or suppliers of NHBMs from both industrialised and non-industrialised countries for bioprospecting and this, therefore, requires effective regulation and in order to ensure that such resources are acquired in the appropriate manner, and as prescribed by the CBD.

Artuso (1997b) further maintains that source country suppliers that can provide biological samples and derived products which combine relatively rare ecological characteristics with associated cultural and scientific knowledge, low production costs, a stable political environment, etc., have the potential to obtain significant rents.

There is a distinction between the value of finished products containing or derived from biochemical resources, and the significantly lower value of raw biological material, as an input in the research or production of these products. The need for access to technology to enable producers, especially those in non-industrialised countries, to add value to the raw biological material in order to increase potential benefits, is, therefore, highlighted in this regard.

Although markets for products derived from, or containing biochemical resources, are substantial, competition between suppliers of biological material, low probabilities of developing a new product from any given sample, and continued advances in alternative Research and Development (R&D) technologies, will continue to limit the compensation that bioprospecting organizations are willing to provide for unevaluated biological samples (Artuso, 1997b; Simpson *et al*., 1996). It remains a fact, however, that many biochemical compounds still cannot easily be synthesized. In addition, increasing numbers of- consumers prefer to use natural products instead of synthetic substitutes. This creates opportunities for developing commercial-scale operations for production and extraction of biochemical material. The bulk supply of raw materials and purified natural products can provide a source of revenue and a

means of developing technical and management capabilities. It must be noted, however, that the laws of supply and demand still hold; unless the commodity can be differentiated on the basis of quality or other characteristics, prices and profits will be limited by the ability of other suppliers to enter the market (Artuso, 2002).

In a competitive market environment, generating significant long-term benefits from bioprospecting activities will require the development of differentiated products and services that combine access to biodiversity with associated knowledge, technical capabilities, and marketing arrangements (Artuso, 1997b, 1999, Rauser & Small, 2000).

The entrepreneurial and institutional capabilities required for developing and marketing new biologically-derived products are quite similar, whether the product is recombinant interferon, a plant-derived anti-cancer agent, or a novel industrial enzyme derived from microbial diversity (Artuso, 2002).

Most of the bioprospecting activities underway in developing countries have been initiated by foreign organizations and the host countries have not responded by developing more proactive efforts to promote bioprospecting or laws that govern bioprospecting (Artuso, 2002).

What is important, especially for provider countries, is the recognition that it is the interaction of the biological and associated abiotic characteristics of biological resources that can give rise to value-added bioprospecting. The interaction between conservation of biological resources, bioprospecting, and knowledge generating investments thus becomes critical.

The above points to the need for a bioprospecting strategy at national level that can facilitate the understanding of the ABS market and its drivers, as well as the generation of essential knowledge about a country's biodiversity that may be interesting from a bioprospecting perspective. It can, therefore, be argued that a country's optimal bioprospecting strategy will include some level of knowledge-generating investment. Padmashree (2005) argues that the biodiversity infrastructure investment that the CBD requires parties to make in terms of inventories of genetic resources and of ethnobotanical knowledge, makes it possible for a country to structure an estimate of the economic value of its own genetic wealth. This does however, require that the necessary human capital be developed or empowered, in order for such knowledge investment to be effective in the long term.

According to Artuso (2002) Costa Rica and South-Africa are two countries that are using the experience and technical capabilities gained from initial bioprospecting endeavours to develop

more comprehensive value-added bioprospecting programs. Many other countries that are obliged to regulate access to genetic resources and benefit-sharing may not have invested in the necessary human and information capital necessary for the effective use of biodiversity infrastructure.

For many developing countries potentially beneficial bioprospecting activities and projects may never be developed due to an inhospitable policy environment, or due to a lack of institutional or technical capacity within the country. An effective (and efficient regulatory framework at the national and international levels, supported by innovative programmes and strategies at the national level for the development of biochemical resources, can promote bioprospecting investments, facilitate successful technology transfer, and support the formation of a profitable industrial sector that is linked with the conservation and sustainable use of biodiversity (Artuso, 2002).

It is particularly interesting to note that despite the international regime negotiations that are currently underway, very few countries have integrated bioprospecting and biotechnology development efforts to a significant degree (Artuso, 2002). At the most basic level a critical mass of scientists and technicians trained in biochemistry and molecular biology is essential for R&D activities involving bioprospecting and modern biotechnology.

It is important to note that in the final analysis with regard to bioprospecting in developing countries the transactions will be between providers in developing countries and users (firms) in developed countries. It is therefore important that dialogues between industry and providers occur to foster understanding between the two sectors. This can also help in terms of contract formulation issues to address the information asymmetry that disadvantages providers.

Glowka (2005) in his proposal for the establishment of a bioprospecting certification system also considered the need for dialogue between the different stakeholders. His concern was how to determine which category of stakeholders could cover the operational cost and secure sources of income for the establishment and operationalisation of a bioprospecting certification system. The major stakeholders, he argues, that could participate in this system are the private sector, the public sector (e.g. provider countries), intermediaries and local and indigenous communities. He points out though that the private sector demand for a certification system is unclear, the demands and interests of non-profit and commercial intermediaries are also unclear. With regard to the demands of provider countries or indigenous and local communities, the demands may be clear but participation in the system may also need to be clarified.

The above is mentioned under this section because essentially the same group of stakeholders may have to face the same challenges in terms of the implementation of domestic ABS frameworks, and dialogue may be necessary to ensure that interests are clear, understood, catered for and respected, as far as relevant and appropriate, if the systems are to be successfully implemented.

3.5 THE LINK BETWEEN BIOTECHNOLOGY AND BIOPROSPECTING

Bioprospecting and modern biotechnology also overlap in more specific ways. Biotechnology techniques are used as a means of producing commercial quantities of complex natural products that were discovered through bioprospecting activities, but have proven too difficult or costly to synthesise chemically.

As can be seen below, biotechnology development strategies and value-added bioprospecting programmes also share many of the same policy and business development issues. Potential synergies exist in three areas, namely the scientific and technical linkages, common policy and programmatic issues, and reciprocal benefits.

Table 3.1 Potential synergies between biotechnology development and value-added bioprospecting

Scientific and Technical linkages	Common Policy and programmatic issues	Reciprocal benefits
Biochemistry Genetics Cell & tissue culture Fermentation techniques Recombinant production of natural products Prospecting for genes conferring valuable agronomic traits or coding for valuable enzymes and other products	Foreign investment policies Technology licensing arrangements Intellectual property rights to isolated biochemicals Coordination of public-private R&D activities Finance and business development for start-up enterprises Access and benefit-sharing for use of wild biodiversity	Creation of conservation incentives Additional sources of funding and technical assistance Broader allocation of policy and program development costs Diversification of market opportunities Growth of GDP/ general economy of the country

Source: Artuso (2002)

These linkages are mentioned here to highlight the need for investment in synergistic strategies for biodiversity, bioprospecting and biotechnology research and development that would require multi-skilled, cross-sectoral human, technical and financial resources. If countries are to deal with bioprospecting effectively, there should be a quest for them to become users and creators of value-addition of their own biodiversity, and not simply providers.

3.6 THE NAGOYA PROTOCOL ON ACCESS AND BENEFIT-SHARING AND ITS LINK TO BIOPROSPECTING

The discussion in this chapter so far has focused on bioprospecting and the issues around it. The Nagoya Protocol is a direct outcome of some of the challenges that faced the ABS policy arena such as, for example, the need to ensure Prior Informed Consent and Benefit-Sharing.

The Nagoya Protocol emerged under the CBD which enshrines the fundamental principles upon which the Protocol on ABS is based. These are derived from Article 15 of the CBD (CBD, 1992) which recognizes the sovereign rights of Member States. over their natural resources, and that the authority to determine access to genetic resources rests with the national governments and is subject to national legislation. ; Access to genetic resources shall be based on Prior Informed Consent (PIC) and Mutually Agreed Terms (MAT), including the sharing of benefits arising from the commercial and other utilization of genetic resources.

These provisions of the CBD were, however, not fully implemented because provider countries maintained that despite the CBD and its voluntary Bonn Guidelines, cases of misappropriation of genetic resources and associated traditional knowledge remained rampant. It was recognized by both provider and user countries that there was a critical need for legal certainty and transparency at the international level especially regarding how to ensure benefit-sharing once genetic resources had left the provider country and were being utilized in user countries. This necessitated the need for an international framework to address cases when a Genetic Resource was accessed illicitly and then developed for economic advantage in another jurisdiction. Clear procedures in user countries, when accessing genetic resources and/or the associated traditional knowledge, was, thus, also needed.

The negotiations towards an international regime on ABS began in earnest after the call by world governments in 2002 in Johannesburg, South Africa, for a legally binding instrument on ABS. The negotiations culminated in the adoption of the Nagoya Protocol in Japan in 2010.

Table 3.2 below provides the chronological emergence and establishment of multilateral attempts to regulate access to genetic resources and protect knowledge up until the time when the Nagoya Protocol was concluded.

Table 3.2 Chronological emergence of multilateral agreements on genetic resources and/or the associated (traditional) knowledge relevant to the ABS process and the Nagoya Protocol on ABS. (You need to decide if you want the font in this table to be the same as the others – look at the headings as well. Your headings in all tables should probably look the same, bolded or upper case, etc.)

Instrument	Year established	Objective/Mandate
Union for the Protection of New Varieties of Plants (UPOV)	1961, 1978, 1991	Provides common rules to protect new plant varieties
World Intellectual Property Rights Organization (WIPO)	1967	To encourage creative activity, to promote the protection of intellectual property throughout the world
Convention on Biological Diversity (CBD)	1992	To ensure sustainable use of conservation of biological resources and the equitable sharing of benefits arising out of such use
WTO's Trade Related Aspects of Intellectual Property rights (WTO - TRIPS)	1995	Aims to promote effective and adequate protection of the intellectual Property Right on a global scale
Organization of African Unity (OAU) Model Law on ABS AU	1999	Protect the rights of local African communities in respect of their knowledge and genetic resources

International Treaty on Plant Genetic Resources for Food and Agriculture	2001	Ensure non-restriction of genetic resources for Food and Agriculture
Bonn Guidelines	1999	Provides Voluntary Guidelines to Member States of the CBD to assist in the regulation of access to genetic resources and the equitable sharing of benefits
Nagoya Protocol on ASB	2010	Provides legally binding rules and obligations regarding access and benefit-sharing to user and provider countries of genetic resources and/or the associated traditional knowledge

Source: Own based on the literature Kamau et al, (2010)

The Nagoya Protocol was opened for signature at the United Nations (UN) Headquarters in New York, from 2 February 2011 to1 February 2012. The Protocol will enter into force 90 days after the date of deposit of the 50th instrument of ratification. The Protocol counts, to date, 15 ratifications and 92 signatures. A significant and growing body of literature on the Nagoya Protocol provides in-depth analysis of the Protocol and its respective articles from various viewpoints. See for example, Laird and Wyberg (2012); Buck and Hamilton (2011) Bavikate and Robinson (2011); Nijar (2011); Prathapan and Rajan (2011); Hodges (2011) and Kamau *et al.,* (2010) amongst others. An indepth analysis is beyond the scope of this study, as it simply looks at what critical factors are necessary to implement the Nagoya Protocol as well as national ABS measures that effectively assure successful implementation at all levels.

3.6.1 The Core Elements of the Nagoya Protocol[9]

The Nagoya Protocol has four core elements, which are, access to genetic resources; fair and equitable sharing of benefits; compliance; and, traditional knowledge associated with genetic resources. Below follows a succinct discussion of these four core elements.

3.6.2 Access

The Protocol provides for sovereign rights over natural resources. Access to such genetic resources is subject to the Prior Informed Consent (PIC) of the provider country. It requires ABS measures at the national level, that provide for:

- legal certainty, clarity and transparency
- fair and non-arbitrary rules and procedures
- clear rules and procedures for PIC and MAT
- the issuance of a permit or equivalent

[9] The reference for the next sections is the Nagoya Protocol on Access and Benefits Sharing and the fact sheet prepared by the CBD Secretariat

3.6.3 Fair and Equitable Sharing of Benefits

Regarding Benefit Sharing, the Protocol provides for an obligation by signatories to take measures to ensure that benefits arising from the utilization of genetic resources, as well as subsequent applications and commercialization, are shared with the provider country. It further provides that such benefits are to be shared on Mutually Agreed Terms (MAT).

Such benefits may be monetary and non-monetary (access fees, milestone payments, license fees, royalties, transfer of technology, sharing results of research, effective participation in research).

3.6.4 Compliance

Under the Compliance provisions of the Protocol, signatories are under obligation to provide measures to ensure that genetic resources utilized within a Party's jurisdiction have been accessed in accordance with PIC and MAT; to address situations of non-compliance; and, to cooperate in cases of alleged violation of domestic ABS legislation or regulatory requirements.

Parties are further obligated to take measures to monitor the utilization of genetic resources. This provision calls for the designation of effective check points for collection of information at any stage of research, development, innovation, pre-commercialization or commercialization. Member States are also required to take measures to encourage reporting requirements on MAT, to encourage cost-effective communication tools and to use the Internationally Recognized Certificate of Compliance as evidence that PIC was obtained and that MAT was established.

The Compliance obligations also provide for tools to encourage compliance by users and providers, and encourage the development, update and use of Model Contractual Clauses for MATs and the development and use of Codes of Conduct, Guidelines and Best Practices and/or Standards.

3.6.5 Provisions Related to TK and to Indigenous and Local Communities

The provisions under this core element are similar, or related to, the above mentioned access, benefit-sharing and compliance. They apply to Traditional Knowledge (TK) associated with genetic resources, as well as access to genetic resources where indigenous and local communities have established rights to genetic resources, in accordance with national laws.

3.6.6 Tools and Mechanism to Assist with Implementation

The Protocol has a number of measures to ensure assistance to parties implementation of the Protocol. These tools or measures relate to:

- Capacity-building/Awareness-raising
- Technology Transfer
- National Focal Points and Competent National Authorities
- ABS Clearing House
- Financial Mechanisms
- Monitoring and Compliance with the Protocol

CHAPTER 4

DEVELOPMENT OF INDICATORS TO MEASURE EFFECTIVE ABS IMPLEMENTATION AT THE NATIONAL AND INTERNATIONAL LEVELS

One of the greatest indicators of our own spiritual maturity is revealed in how we respond to the weaknesses, the inexperience, and the potentially offensive actions of others.

~ ***David A. Bednar***

4.1 INTRODUCTION

As a major part of this study is focused on developing indicators to assess the effectiveness of ABS implementation based on the critical factors, this warrants a short exploration of indicators. Countries around the world today within the environmental policy arena, are faced with increased public awareness of environmental issues, their international aspects, and their linkages with social and economic issues.

4.1.1 Indicators and the Issues around them

There is now a demand for reliable, harmonised and easily understandable information, not only from the environmental community but also from other public authorities, businesses, the general public, environmental NGO's, research and academia and other stakeholders (Linster, 2003) This has resulted in the production of environmental information that is more responsive to policy needs, their implementation and the way in which they meet public information requirements. The aim of this process is to strengthen the capacity of countries to monitor and assess environmental conditions and trends so as to increase their accountability and to evaluate how well they satisfy domestic objectives and international commitments as well as obligations under a number of multi- and bilateral environmental agreements. Indicators have emerged as a valuable and cost-effective tool for monitoring and evaluation (M&E) in this process (Linster, 2003).

Indicators have been used for a long time as an M&E tool with which more information can be obtained about issues as varied as people's health, weather, and economic welfare (Segnestam, 2002). An indicator points to an issue or condition, thusserving as a sign or signal that relays a complex message, potentially from numerous sources in a simplified and useful manner (Jackson et al., 2000). Its purpose is to show how well or effectively a system is working. If there is a problem, an indicator should help to determine what direction to take to address the issue. The primary uses of an indicator are to characterize current status and to track or predict change (Jackson et al., 2000). Indicators are as varied as the types of systems they monitor. Effective indicators, however, have certain characteristics in common (UNECE Expert Group, 2005):

Effective indicators are characterised by being relevant to the topic they are to assess, easy to understand by those doing the assessment, reliable and based on readily accessible data. Indicators can be useful as proxies or substitutes for measuring conditions that are so complex that there is no direct measurement. For instance, it is hard to measure the 'contribution of ABS to sustainable development of a country' and, not least, people may have different opinions on which conditions count most. Compared to indicators of economic and social aspects, indicators related to the environment are a relatively new phenomenon (Segnestam, 2002).

Segnestam (2002) points out that indicators, or indices, are not ends in themselves – they are a means to improved decision-making . Analyses based on indicators, indices, and, sometimes data, are carried out, resulting in information, which form the basis for sound decision-making. For the analyses to be complete and accurate, more data, or other indicators than the ones originally monitored, or from other sources, may have to be included. This is quite natural as the purpose of an indicator is for it to indicate a change – not necessarily disclose all aspects behind a change. Not until all information is gathered, and the decision-making processes have integrated the gathered information, has the goal of indicator development been reached.
It is suggested that due to the above complexity it is useful to break down the relevant critical factors into several building blocks that constitute that critical factor and to develop indicators that measured each factor. Considering the broad social, political and economic impact of ABS, mostly qualitative indicators have been utilised for the purposes of this study. As was pointed out by the UNECE Expert Group on Indicators (2005) certain topics, particularly in the field of social performance measurement, cannot be easily made subject to quantification. Indicators for the critical factors for effective ABS implementation, face the following quantification challenges , as elucidated by the UNECE Expert Group on Indicators: A number may not provide a clear sign of a positive or negative impact with regard to ABS implementation

(UNECE Expert Group, 2005). Numerical values may lose significant information through the process of consolidation. For example, certain measures necessary for effective ABS implementation may simply be incomparable across countries.

- The nature of certain issues at the national level regarding ABS implementation may make quantitative measurements impossible.

They advise that in situations where quantitative measures are not effective one should rely on qualitative measures. Therefore, in the design for indicators for this study, a broad survey was developed to test the indicators for effective ABS implementation which include queries of a more open-ended nature regarding ABS policies and programs and issues relevant to ABS implementation at the national and international levels. This kind of qualitative indicator is based on responses that are scalable rather than a request for open-ended descriptive statements. From another side, qualitative indicators have been complemented, as far as possible, by quantitative indicators.

Based on the above, indicators have been developed to measure the effectiveness of critical factors related to ABS implementation from two broad perspectives namely:

i) Those indicators that measure activities that deliver implementation of ABS regimes, such as the establishment of institutional frameworks, developing policies, making available information and best practices, etc.
ii) Those indicators that measure effects or outcomes of implementation.

4.2 LITERATURE REVIEW ON THE EFFECTIVENESS OF ABS REGIME WITH A VIEW TO DERIVE INDICATORS

This section attempts to identify potential indicators from the literature on the assessment of ABS implementation at all levels globally.

Laird and Wynberg (2003) classified countries that regulate access to genetic resources or plan to do so into three categories namely:

- Countries and regional groups already regulating access to genetic resources to ensure prior and informed consent and benefit-sharing (1 region group and 12 countries)
- Those planning to regulate access to genetic resources to ensure prior informed consent and benefit sharing (2 regional groups and 32 countries)
- Those who may also be planning to regulate access to genetic resources in the near future (10 countries)

The state of play has seen substantial change since 2003 when negotiations for the Nagoya Protocol commenced. Since then there has been movement within the various areas of concern which the Protocol negotiations addressed, fuelled particularly by the onset of the negotiations themselves which concluded in 2010 with the adoption of the Protocol. There is now renewed effort by Member States of the CBD to implement the Protocol through the development of the requisite legislation at national level, thus ensuring compliance.

The Secretariat of the CBD established that the forms of current ABS legislation in the world can be divided into the following five categories (Qin, 2009):

- Authorization clauses in the existing framework of environmental law
- Amendment or broad interpretation of existing legislation to cover ABS
- Comprehensive legislation with broader goals including ABS provisions
- Special ABS legislation, and,
- Supra-national legislation of regional organizations.

Significant legislative ABS measures are currently being developed around the globe to regulate bioprospecting and benefit-sharing. The key question is, however, whether these measures are effective in doing what they are intended to do. The following section considers literature with regard to existing legal frameworks and case studies of ABS, with a focus on the reasons why these legal frameworks or measures are effective or not. It also derives indicators for the critical factors based upon the literature.

A study by Garforth *et al*., (2005) reviewed the ABS measures of 35 countries from Latin America and the Caribbean, Asia, the South Pacific, Africa, Europe and North America and regional measures of the Andean Community and the Nordic countries. This review focused on and examined the relevant laws and policies, and their provisions on scope, prior and informed consent, mutually agreed terms on benefit-sharing, compliance and monitoring and enforcement, as well as any access agreements that were granted. The study also analysed workshops that occurred during or within that time and capacity building projects related to the implementation of ABS. This review was carried out at the time of the onset of the ABS negotiations, i.e. ABS Working group three.

The assessment found that while the details of laws and policies varied from one system to another, there were a number of commonly included basic elements. These elements provided useful indicators for ABS implementation and are presented below.

- The establishment and identification of an ABS permitting authority

- Requirements and procedures for obtaining Prior Informed Consent (PIC) from government authorities and indigenous and local communities
- Requirements for the negotiations of Mutually Agreed Terms (MAT) and benefit-sharing provisions among national authorities and other providers
- Presence of and enforcement of compliance measures
- Clarity on who can issue PIC and MAT and how this would be done
- Legal certainty and clarity
- Basic commercial and administrative rights
- Clarity on the meaning of commercial and non-commercial access as well as how to deal with activities that fall in the grey area between these two issues
- The use of a clear definition for genetic resources and biological resources
- Clear purpose and rationale for the creation and implementation of ABS measures
- Presence of clear user measures such as disclosure of information
- Strategy for increased awareness about ABS
- Active strategy for engaging with ABS
- Presence of a clear and functional ABS legal framework or administrative measure

Investment of national resources into ABS capacity development (Garforth et. al., 2005) This assessment described the need for clarity regarding effective implementation as enumerated above.

Three years after the above study, a detailed look at the ABS climate of four developing countries in Africa – Botswana, Ghana, Uganda, and Zambia – was carried out by UNEP (2008). This assessment presented the countries' own views on national implementation and ABS policy development. The assessment focused on the following parameters:

- What policies, legislation and legal capacities exist, or are proposed, in order for the countries to deal with access to genetic resources and the sharing of their benefits (ABS)?
- Which institutions in these countries are engaged in the management and implementation of ABS activities? What are the administrative arrangements for ABS management, and what are the major gaps and constraints?
- What projects with ABS components are being implemented in the countries?
- Who are the major ABS stakeholders?
- Based on the identified needs and gaps, what actions can be undertaken to clarify, develop and implement ABS measures in each country?

The main outcomes of this assessment (UNEP, 2008) pointed to the fact that:

- Poverty alleviation, food security, human security and revenue generation are key issues which countries see as the desired objectives of any national ABS policy.
- The decentralised nature of decision-making on natural resources issues affects the development and implementation of policies in the ABS policy arena.
- All the countries have extensive policies relating to natural resource management, although only one country was regulating access as per the provisions of the CBD and others were considering adapting the African Union (AU) model[10] legislation on ABS.

The potential indicators that this assessment brings to the fore are:

- Presence of ABS national technological capacities
- Presence of measures to raise awareness of ABS principles
- Presence and maintenance of effective and functional ABS institutional capacity
- Measures to link ABS and poverty alleviation
- Ability to addressing the lack of ABS policy at the national level and increasing the national capacity to implement existing ABS policies
- Presence of measures to allow for full and effective engagement of local and indigenous communities and,
- Presence of measures to allow for the effective monitoring and enforcement of ABS agreements in user and provider countries

The assessment also highlighted the need for private sector engagement which would include business perspectives and practicalities in ABS policy design and implementation. It further points out that the valuation of components of the genetic resources of biodiversity would encourage conservation and sustainable use. The need for trained and knowledgeable personnel – researchers, natural resource managers and community leaders with awareness of the ABS process and principles - are also shown to be important in both development and implementation of ABS policies.

4.2.1 Case Studies of Review of Implementation of ABS Instruments Around the World

Three case studies in Kamau and Winter (2009) have been very insightful in considering what practical realities are faced by those countries in the process of developing and implementing domestic ABS instruments. These are the Kenyan, Australian and South African cases and are briefly presented here to elucidate the important elements that emerged and can be

[10] The African Union Model refers to model legislation that was developed under the auspices of the Organization for African Unity that was meant to serve as the template for African countries to follow or adopt as is to regulate access to genetic resourcs and traditional knowledge in Africa

considered as potential indicators for the critical factors. The potential indicators extracted will be presented after each case study and will be reflected in the positive sense.

4.2.1.1 The Kenyan Case

A study that almost resembles the analytical approach of Richerzhagen (2007) is that by Kamau and Winter (2009) on the Kenyan study. In this study they investigate procedural and substantive requirements of access authorizations with a view to identifying unnecessary transaction costs and attempt to suggest possibilities of streamlining procedures and criteria. In their investigation they focused on Kenyan access regulation. The results can be considered as representing similar situations in many other developing countries.

The regulations that they looked at were fairly recent and can, therefore, be regarded as part of the new generation of legislation in the ABS arena. The law that regulates ABS in Kenya is the Environmental Management and Co-ordination (Conservation of Biological Diversity) and Resource, Access to Genetic Resources and Benefit-sharing regulations of 2006 (Kamua and Winter, 2009). They focused mainly on the access procedures established by the Kenyan regulations.

From the analyses of three regulations, they established that the following conditions or elements may impact the effectiveness of the Kenyan ABS regulations:

i) Lengthy procedures
ii) Cumbersomeness
iii) High costs
iv) Multiple costs
v) Overlapping procedures
vi) High costs same as iii above
vii) Long delays
viii) Vagueness
ix) Uncertainty
x) Ambiguity

Their assessment is that these characteristics of the procedures that they analyzed would most likely discourage basic research. Likewise, they might not be capable of attracting potential commercial bioprospectors (Kamua and Winter, 2009) as a result.

They further provide a table presenting, in a condensed form, the negative characteristics (for access) identified in the Kenyan regulations which they maintain are also prevalent in the ABS

regimes of many other countries, including those of forerunner countries (first generation ABS regulators), such as the Philippines (Executive Order 247) and Brazil (Provisional Measure No 2.186-16). The negative impacts they are likely to produce are also shown.

They concludethat the Kenyan ABS regime does not facilitate, but rather impairs, access to Genetic Resources.

The Kenyan case study highlights the following potential indicators for some or all of the critical factors:

- Low transaction costs,
- Legal certainty and clarity,
- Non-complex administrative procedures,
- Need for one stop shop
- Use of one permit system
- Timely processing of permits
- Efficient coordination, harmonisation and cooperation
- Incentives to promote basic research
- Need for empowerment and capacity building of community stakeholders
- Clear authority for granting access, PIC and MAT
- Understanding of the ABS market and its needs
- Own practical experience with using one's own biodiversity
- Clear assignment of property rights and intellectual property.

4.2.1.2 The Australian Case

Burton (2009) in Winter and Kauma (2009) provide an assessment of how Australia is implementing the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization (the Bonn Guidelines). The Australian federal ABS law is found at *Part 8A – Access to biological resources in Commonwealth areas of the Environment Protection Biodiversity Conservation Regulation 2000.*

According to Burton (2009) the (six) objectives of the federal access to biological resources law are set out as regulation 8A. 01 of *Part 8A of the Environment Protection Biodiversity Conservation Regulations 2000*.

The assessment focuses first on the objectives of the regulations and finds them consistent with both the CBD and the Bonn guidelines. The assessment then proceeds to look at the

system in further depth. It identifies the access requirements and procedures required by the regulation. A comparison is then made to see whether the Australian ABS law and administrative structure implements the Bonn Guideline. The conclusion drawn is that policy, administrative and legislative actions of the Australian government introduced by the ABS system through Parts 8A and 17 of the Environment Protection Biodiversity Conservation Regulations 2000, follows closely the advice and instruction set out on the Bonn Guidelines for providing countries. Its relative clarity and comprehensive coverage warrants it being regarded as a model ABS legislation. The implicit assumption in the conclusion of this study is that it is effective in regulating access and benefit-sharing within the ambit of the ABS system.

Burton (2009) also states that providing legal certainty (for compliance, enforcement and verification) for any party considering investing in research and development of Genetic Resources it is important to maximise the amount of research undertaken and to maximise the economic value of genetic resources as a vital ecosystem service. The Australian system, i.e. the Genetic Resources Information Data Base (GRID), provides this through a low-cost system of 'virtual' certificates of origin and evidence of legal provenance as one way of doing this.

Burton (2009) argues that the Australian GRID system also provides transparency about what materials have been collected, by whom, when, where and on what terms. The GRID system also supports domestic and foreign researchers to protect the intellectual property in their discoveries on all potential markets (Burton, 2009). Transparency also provides an important signal to governments responsible for protecting ecosystem services. If governments are clear about which areas are of scientific interest, or are giving rise to the development of new and valuable bio-derived products, then they have a better basis for allocating scarce conservation dollars. Burton (2009) maintains that this is important in the field of micro-organisms that have no iconic status and where community awareness of their contribution to society is limited.

Burton (2009) points out that the effectiveness of this instrument lies in its clarity, comprehensiveness, time in processing the permits and the cost involved in processing the permit. Transparency seems to be another indicator of effectiveness as well as the steady increase of applications for access to the federally managed Genetic Resources.

The Australian case highlights a number of potential indicators for some or all of the critical factors which is namely:

- Transparency about materials collected, by whom, when, where and on what terms
- Protection of IPR and discoveries in potential markets

- Efficiency in time required for processing permits
- Low transaction costs in processing a permit
- Local capacity to use one's own biodiversity
- Enhanced information sharing
- Disclosure of information
- Signal about the importance of bioprospecting to governments
- Relative clarity and comprehensive coverage of ABS core elements
- Legal certainty (for compliance, enforcement and verification)
- Resource investment for biodiversity knowledge generation and infrastructure
- Use of the certificate of origin
- Use of evidence of legal provenance

The Australian case is interesting, given the fact that Australia is a mega-diverse country, and at the same time an industrialised country that serves both as a provider country and a user country. Australia also has the challenge of taking cognisance of and having regard for its indigenous communities/people.

4.2.1.3 The South African Case

South Africa has put in place an ABS regulatory framework, articulated through a chapter of the National Environmental Management Biodiversity Act (10 of 2004) and the regulations passed under that Act (Wynberg and Taylor, 2009). This legislation came into effect in April 2008. Wynberg and Taylor (2009) examined the new legislative framework regulating bioprospecting and ABS in South Africa and explored some of the challenges experienced in implementing it.

The examination of the South African ABS regulatory framework did not focus on assessing the effectiveness of the legislation but rather, identified a number of legislative gaps and inconsistencies. These legislative gaps and inconsistencies will present significant constraints towards the achievement of an efficient and coherent legal framework that will facilitate access to genetic and biological resources and will also ensure the fair and equitable sharing of benefits derived from their use.

According to the review by Wynberg and Taylor (2009) the Act has created confusion in regulating research and there is thus a need for urgent clarity if natural product development is to be stimulated and not impeded.

The Act also fails to deliver wider community benefits from bioprospecting. Another major challenge identified is insufficient capacity, political will and a lack of awareness as to the rights, roles and responsibilities of different interest groups and constituencies. This may result in long administrative procedures, time delays, lack of transparency, overlapping, duplication and omission of powers and mandates caused by unclear division of powers and mandates among involved departments. The issue of intellectual property rights protection seems also not to be adequately addressed in the Act, and the protection of farmers' rights remains a key legislative gap in South Africa.

The process of drafting the South African ABS legislation took almost 14 years to complete. This is a significant fact given that South Africa is amongst the most developed countries in Africa with significantly better resources and capacities than many other countries. Despite this advantage and the length of time taken to develop the legislation, it still had a number of deficiencies that had to be addressed after the law was passed and its implementation had to commence. This has significant implications for other African countries as well as for other non-industrialised countries from other regions.

This case study does have relevance to the critical factors developed by Richerzhagen (2007) and points to the following indicators:

- Legal certainty, transparency and clarity
- Efficient and coherent legal framework for ABS
- Efficient and transparent regulation of basic research
- Accounting for community benefit sharing
- Political will and commitment
- Awareness on the rights, roles and responsibilities of different interests groups and constituencies
- Non-complex and non-bureaucratic administrative procedures
- Timely decision making
- Transparent processes
- Coordination, synergistic implementation of the legal framework with other relevant policies and legislation
- Clear responsibilities, authority and mandates among institutions
- Clear assignment of IPR and property rights
- Low transaction costs

4.3 EFFECTIVE IMPLEMENTATION OF THE NAGOYA PROTOCOL

The Nagoya Protocol is key to the effective implementation of the ABS domestic instruments. A literature search was, therefore,carried out by the researcher to determine whether potential indicators exist for the effective implementation of the Protocol on the basis of the critical factors mentioned earlier.

Young and Tvedt (2009), in an attempt to assist parties during the negotiations process of the Nagoya Protocol, consider what building blocks could be used to ensure a functional and balanced ABS Protocol. They argue that possible building blocks for a creating a balanced ABS regime should:

- Include a clear “map” of the coverage and processes that comprise ABS
- Enable countries to use which ever “legal vehicles” are most appropriate within their own systems for ABS implementation
- Sharpen the basic understanding of the ABS process, within the generally accepted views among parties on ABS, about which activites constitute“utilization of genetic resources”, , thus, defining one core trigger of the obligation to share benefits
- Include a global ‘ABS Ombudsman” as a useful component of such a regime
- Establish standards, models and forms in a balanced regime
- Establish a method for official communication between the various users, providers, middlemen, countries and other stakeholders that are directly involved in each ABS transaction.

The central thesis in the analysis by Young and Tvedt (2009 p. 1) is to consider what is critical for the functionality of an ABS regime based on contracts and, what would be enforceable in respect to the above building blocks. They consider what provisions in the draft Protocol could affect the functionality of “ABS on the ground”, in other words what provisions are neccessary to enable the adoption of the international regime and implementation of a balanced approach with user-side measures which would be compatible with provider legislation, by each CBD Party and would encourage their adoption by non-CBD countries. This very same concern is important for consideration of the implementation of the Protocol and domestic ABS instruments. Young and Tvedt’s (2009 p. 1) main focus is, therefore, to focus on identifying legal specific issues and proposals for making ABS functional on the ground.

Young and Tevdt (2009 p. 1) maintain that in the time after the entry into force of the CBD, the bulk of focus has been on the provider side of this balance. The challenge for effective implementation of the Nagoya Protocol and the domestic ABS measures of parties is, therefore, to decide which user and provider side measures could enable a balanced and

functional ABS implementation. Care would need to be taken by both sides in the ABS policy arena, i.e. user and providers, so that the way they choose to implement the Protocol and the domestic ABS instruments would allow for both the user-side and provider side, and would ensure that implementation would not be impractical, unreasonable or undesirable.
Young and Tevdt (2009 p. 1) argue that the world is not uniformly divided into “user countries” and “source countries”. This therefore calls for a recognition that:

- Any country may be a source of genetic resources
- Any country, whether highly developed or not, may be a user country

This, by implication, means that many countries may be serving as both users and providers. For this reason, whichever way the Protocol or national domestic ABS instrument is implemented, it could serve as a two-edged sword, applying to the country itself, as well as to outsiders.

An advantage of the Nagoya Protocol is that it has now provided legal certainty at international level. It is now up to countries to follow through and to provide legal certainty at the domestic level forboth providers and users.

The observation of Young and Tevdt (2009 p. 2) that the negotiations for the Nagoya Protocol had to work on two fronts, must be recognised as correct, namely, that they hold major implications for implementation and functionality. These two fronts were:

- The identification and provision of positions that would most strongly affect national positions and the negotiation of clauses which ensure that the regime will support national interests; while on the other hand,
- The need for negotiators to develop a regime that would function in law as well as in practice in a consistent and integrated way, across all CBD countries and sectors.

The political and practical elements of the negotiations were intensively intertwined which has made it difficult to separate political negotiations from functionality (Young and Tvedt, 2009 p. 3). This will certainly be the case again during the process of full and effective implementation of the Nagoya Protocol, especially in the ongoing talks to operationalise the Protocol. Care must however, be taken to ensure that those involved recognise that the dynamics have to change to ensure effective implementation. A critical partner, namely the industry, will have to be significantly involved , particularly since they have different interest from the political imperatives. Industry requires a functional framework that provides for incentives, and is facilitated by low transaction costs in a time-efficient manner and, which also allows for the generation, flow and sharing of benefits.

It is up to Member States to the Nagoya Protocol to decide whether this will indeed be the case. The Protocol paves the way for that.

Tvedt and Rukundo (2010) attempted to highlight the issues of functionality as it related to the Protocol. It must be kept in mind though that at the time they made their analysis the negotiations for the Protocol were still not concluded.

Tvedt and Rukundo (2010) provided their analysis as an attempt to contribute to a better technical understanding of some of the issues at the core of the negotiations. They further aimed to assist in the preparations for the last round of negotiations before the adoption of the Protocol, with a view to ensuring that the Protocol would effectively contribute to the fulfillment of the third objective of the CBD.
The provisions of the Protocol, as they currently stand, will not be conducive to the fair and equitable sharing of benefits unless the wording can be further clarified, to ensure that the Protocol will be implemented through the passing into national legislation. This is a concern since the Protocol provisions, and the related national legislation would have legal standing in relation to users of genetic resources. Particular attention has to be given to issues related to the scope, utilization, and relationship of the prospective Protocol with other international instruments, pathogens and elements at the nexus between access and compliance.

Tvedt and Rukundo (2010 p. 2) maintain that at its core, the ABS-challenge is about creating incentives for private (or public) entities (which create benefits using 'genetic resources'), to share these benefits in a fair and equitable manner. ABS becomes an international issue when a genetic resource of one country is used in another jurisdiction or country.

The functionality of the Protocol will rest on finding an adequate balance between two imperatives (Tvedt and Rukondo, 2010, p. 2), as follows:

- On the one hand, developing countries often advocate for strong compliance mechanisms coupled with clear benefit-sharing obligations. This is essentially based on a view that provider-side law and contractual provisions are currently insufficient in dealing with misappropriation and/or misuse.
- On the other hand, it is not enough to require user-side measures: the Protocol must also make those measures reasonable from the perspective of the user side. The challenge is how to create an adequate balance between these two imperatives without compromising effective compliance and without introducing undue legal uncertainty and burden for users of genetic resources.

One basic assumption seems to be that ABS is made functional by the use of contracts between the providing country and the user. The challenge is, however, twofold (Tvedt and Rukondo, 2009, p. 2), namely:

1) Creating incentives for users to enter into such contracts, and,
2) Making such contracts enforceable in the jurisdictions where the genetic resources are being used.

The legislation of the user country needs to be clear as to the situations in which users will be bound by specific ABS obligations. The response to this can be found in the CBD in its Article 15.7 (Tvedt and Rukondo, 2010 p. 2). They further maintained that utilization of genetic resources[11] can act as the trigger-point for benefit sharing. Thus several of the difficult issues in the current negotiations can be solved by enhancing clarity and certainty on the concept of utilization as a trigger-point/end-point as regard to when benefits shall be shared. This clarity was achieved by the negotiators when the Protocol was concluded since the Protocol defines the concept of the utilization of genetic resources (Nagoya Protocol, 2010)

Another challenge of a legal nature that Tvedt and Rukondo (2010 p. 2) identify is that the Protocol and the CBD itself are binding upon states, whereas benefits are created by private entities, such as companies, universities etc.

Thus, Tvedt and Rukondo (2010, p. 2) maintain that for the Protocol to have any effects on the private users of genetic resources, its obligations need to be implemented in the home jurisdiction of the user. They further assert that the challenge in international law, is that the principle of sovereignty prevents the law of one country (the providing country) from having legal effect in the jurisdiction of another country (user country), unless the user country recognizes any such legal effects (reciprocity) in its own legislative area. If one user of genetic resources would be expected to enter into mutually agreed terms (MAT) and share a fair and equitable portion of the benefits arising out of utilization of genetic resources, there would need to be incentives for that user to do so. The private company would need to be obliged under the laws in its home jurisdiction to share benefits or to have an agreement describing how benefits are to be shared.

[11] Utilisation of genetic resources is defined as 'research and development on the genetic and/or biochemical composition of genetic resources, including through the application of biotechnology as defined in Article 2 of the Convention' (Nagoya Protocol, 2010, p. 4)

The Protocol has now provided for this concern under User Measures And Compliance Measures.

Essentially what is now required is to put this instrument, and other instruments that will emanate in response to it at the national levels, to test. It is hoped that this study can assist in making that test of effectiveness and functionality come to pass in an efficient manner.

The final issue for which the Protocol has also provided legal certainty, is the concept of genetic resources which remains as defined under the CBD. These definitions as they are now provided for in the Protocol, addresses the information asymmetry that has plagued the ABS debate for a significant number of years. What is now required is that these definitions are understood and used by all ABS as stakeholders in the implementation of the Protocol and the development and implementation of domestic ABS frameworks.

The study of Young and Tevdt (2009) as well as Tevdt and Rukondo (2010) became available at the height of the negotiations for the Protocol. In this study - post protocol adoption –the study by Young and Tevdt (2009) was of particular interest to this study, and was analysed to see what elements could emerge as potential indicators for some, or all, of the critical factors listed above, as well as drawing upon the emphasis of functionality in each case. Twenty-two (22) elements with the potential to be used as indicators for the critical factors were identified from this study. They are briefly discussed below. For ease of reference the potential indicators from this study will be numbered.

4.3.1 Need for Legal Clarity, Transparency and Certainty

Young and Tevdt (2009, p. 2) defined legal certainty as the ability of each user, provider, national legislator, official, judge, arbitrator or other person to know with a relatively high degree of confidence whether the regime applies to a particular person or action, and if so, what the regime would require in each case.

The commercial system is designed around the ability of the user to know with certainty the following; (Young and Tvedt, 2009, p 2 and 48):

i) Which resources and rights require permission or payment
ii) Which are un-owned and thus can be freely used
iii) What processes to be followed in order to acquire specific resources and rights
iv) Which legal requirements and costs are relevant to the process of assessing and determining the commercial risk and value of every transaction.

Legal certainty in a source country in granting access to genetic resources and/or the right to utilize them **is a two-edged sword** From the provider perspective, legal certainty provides assurance that the user will comply with the terms contained in a given country‘s chosen legal vehicle for ABS, ensuring that obligations are performed, and, that following failure to do so, legal or informal recourse is provided for.

At the contract level, the Nagoya Protocol provides legal certainty to cross-border situations only where each user, provider, agency, judge, arbitrator or other person knows precisely which regime applies to each individual resource or activity. A commercially acceptable level of legal certainty can exist in ABS only where all participants in any transaction involving biological material or rights would be able to answer the following question with certainty: Is the subject matter of this contract a ‘genetic resource” or not?

4.3.1.1 Use of the Definition of Genetic Resource as provided for by the Protocol

The Protocol defines what constitutes a genetic resource, provides legal certainty, and addresses the information assymetry that previously existed amongst parties regarding this concept.

4.3.1.2 Use of the Definition of the Concept of Utilization of Genetic Resources

The definition of the concept “utilization of genetic resources” has vastly simplified ABS, both practical and legally. It not only enables parties to easily recognize each “utilization of genetic resources’ rather than guessing which biological materials have been used, but also proves whether each of them is ‘biological’ or ‘genetic”. Young and Tevdt (2009, p. 12) argued that the approach of focusing on “utilization of genetic resources” which is more apparent on the user-side of each transaction than on the provider side, may decrease the number of activities and approvals required at the time of collection, thereby “streamlining the access process” without diminishing ABS coverage or obligations. It is, therefore, critical that implementation of the Nagoya Protocol and domestic ABS measures take into consideration and support the needs of collectors and users who comply with ABS requirements. Such implementation should also recognize their positive contribution to international conservation, sustainable use and equity.

4.3.1.3 Supporting ABS Complying Users to Minimize the Challenge of Non-Compliance

Young and Tevdt (2009, p. 13) maintain that most analyses that attempt to develop a functioning regime are primarily focused on users who wish to comply with ABS. These users

and bioprospectors make no attempt to conceal their desire to search and screen an area or a grouping of organisms. Being clear about their “genetic-resource-utilisation” intention, these users generally seek to comply with access legislation and contracts.

On the other hand, Young and Tevdt (2009, p. 13) further point out that most discussions regarding ABS compliance focus on the number of persons and entities who utilise genetic resources without ABS contracts. Measures that are sufficient to regulate users who wish to comply with ABS will, therefore, normally not be sufficient to enforce provider-side requirements, especially where the user is operating outside of the provider-side country.

4.3.1.4 Measures for Dealing with Benefits Arising

In order to deal with the issue of benefit sharing, it is important to determine the point at which benefits “arise out of utilization” of genetic resources, and must be shared (unless an ABS contract exists that states a different time and/or type of benefit-sharing) (Young and Tevdt, 2009, p. 15). In this regard Young and Tevdt identified fixed-points for benefit sharing and process-oriented benefitsharing arrangements as a potential way of dealing with the issue of benefit-sharing. Essentially, this could imply that parties may need to consider the development of benefit sharing strategies on a case by case basis in the process of implementing the Protocol and domestic ABS instruments.

4.3.1.5 The Use of Primary Legal Vehicles of Access to Genetic Resources

Young and Tevdt (2009 p. 16) point out that the ABS rights and responsibilities under the CBD are seen to revolve around the provider/source country and the manner in which they exercise their sovereign rights over those resources. In their analysis of the available legal vehicles of access to genetic resources they find that the approaches as outlined in table 1 (legal vehicles) are available to to the provider side of ABS implementation. They point out that despite the fact that the value and use of non-binding contractual instruments are frequently understated, the parties to such instruments are bound by a ‘duty of good faith’ to “use best efforts” to achieve the instrument’s objectives.

Table 4.1 Use of Legal Tools

Legal tool for ABS (access-side) Implementation	On the Ground Experience with this Tool
Enforceable contracts	12 countries require a formal contract under their national law
Memoranda of Understanding and other non-binding instruments	Although the MoU option is not mentioned in the law of any country, nearly all ABS contracts between a provider and a user are unenforceable by law
Implied or equitable (de facto) contracts	This is the tool chosen by the ITPGRFA
Permits enforceable as contracts	15 national laws require negotiation of permits that might render them enforceable contracts
Other permits, licenses or approvals	8 national laws impose permit requirements that would not be enforceable as contracts
Relevant regulatory control by law or agency, requiring no permit or approval	18 national laws impose specific requirements on users and collectors and presume that they will be enforceable even after collection has occurred (i.e., when the user may have taken the resources and left the country.)
No relevant national law in place	Only 39 countries have filed measures in the ABS database, and only 18 of these include binding legal requirements. Other national laws may be relevant, even if not called 'ABS law" or mentioning "genetic resources"
Transactions outside the scope of the ABS regime	A large number of researchers, commercial users and others have concluded that their activities are outside the scope of ABS, citing various reasons.

Source: Young and Tvedt (2009, p. 17)

4.3.1.6 Assurance of Contractual Certainty

For players in the ABS to enter into contractual relations certainty about the contracts are essential, including knowledge of the following: Who owns the genetic resource? Who has the right to grant access to the genetic resource? Who has the right to give permission to utilize the genetic resource? Who has the power to decide how benefits will be shared? How will this knowledge be known/determined? (Young and Tvedt, 2009, p. 22).

4.3.1.7 Industry Standards

For ABS, the desire to have recognized industry standards could create an incentive for commercial users to be more open about the contents of their contracts (Young and Tvedt, 2009 p. 23).

4.3.1.8 Clear Basic Commercial and Administrative Rights on the Provider Side

Basic commercial and administrative rights are important for efficient functioning of the private sector. Clarity on the basic commercial and administrative rights that are prevalent at the national level are, therefore, important for the effective implementation of the international regime. In this regard each country's "access" requirements should be clarified.

Young and Tevdt (2009 p. 22) argue that this is critical also for effective and clear implementation in that the access requirements of each country, since it would make it easier for users to know what is needed and required. The general laws of provider countries should be studied as they apply to ABS, including:

i) the ownership of various kinds of property and/or property rights;
iii) ii) the particular rights of an owner under national law;the finality of contracts and administrative/legal decisions;
iv) the rights of the party to a final contract or under a final decision;
v) legal protection of the Parties to contracts and administrative documents and negotiations (especially the parties that are least able to protect themselves); and,
vi) the system for oversight, implementation and/or enforcement and for administrative or judicial action within the country.

It would be virtually impossible for the ABS regime to adopt provisions which require countries to change or harmonise these basic laws, for two reasons:
The types of laws at the national level mentioned above are very complex and detailed in many countries and further, it would be important for users, user-countries, judges, prosecutors, arbitrators and others, would know with certainty what laws of provider-side country are relevant in each case or transaction.
Young and Tevdt (2009 p. 49) argue that the functionality of the regime would depend on whether each country can formally and officially identify the specific laws, requirements and relevant information necessary to inform any user as to the basic commercial and administrative rights that are applicable in each case.

4.3.1.9 Compliance Measures

Compliance measures need to be in place for remedies and processes to operate successfully. Ultimately the success of effective ABS implementation will depend on willingness to collaborate, rather than on a command-and-control-style legal mandate. Beyond this it is often extremely difficult for foreign parties to effectively utilize the legislative, administrative and arbitration processes of any other country.

There may, further, be a need to develop guidance, technical assistance programmes or appoint an ombudsman to assist providers and source countries seeking to protect their ABS rights and to enable a better mechanism for applying conventional remedies to ABS claims (Young and Tvedt, 2009 p. 25).

4.3.1.10 The Use of Model and Default Clauses

If parties to ABS contracts are willing to use model and default clauses, the regularity of ABS practices (which would initiate the process of defining 'industry standards') would increase without using any kind of compulsion or mandatory provisions. That willingness might be increased where all CBD countries in the regime specifically state that agreed model clauses are automatically valid and enforceable in their respective national courts (Young and Tvedt, 2009 p. 25).

4.3.1.11 Incentive Measures in both Provider and User Countries

If ABS implementation is to depend entirely on formal oversight and enforcement by the source countries, user countries, NGOs and/or private claimants, it will be very unwieldy, and possibly unworkable. Internationally agreed and/or nationally adopted incentives and motivational measures could encourage user participation in, and compliance with, ABS. This will be successful when the value of the reward, as perceived by the user, is much greater than the cost of compliance. Incentives and motivation measures place the onus of responsibility on the user, not by mandate, but by self-interest. The user will comply if they want to receive the benefit. Although this would not completely eliminate the need for governmental oversight, incentives eliminate the need to inspect and compel individual user. In a functional system, users recognize that if they comply with the requirements, they will receive the 'reward' but otherwise they will not (Young and Tvedt, 2009 p. 29).

4.3.1.12 Measures to Ensure Equity and Equality

These measures are aimed at facilitating transactional assistance for traditional and rural providers. ABS is an undisputedly complex subject and information assymetries are prevalent. As a result, in carrying out transactions between commercial entities and rural communities or individuals, the former often experience high levels of uncertainty regarding the capacity of the rural individuals or communities to effectively negotiate in their own interest. In many cases the communities or rural individuals themselves feel similar misgivings. This uncertainty poses a significant risk that an administrator or judge could find that the commercial entity had exerted an unfair level of control in the contractual negotiations due to the rural parties' lack of commercial and legal sophistication (Young and Tvedt, 2009 p. 31).

4.3.1.13 User-Side Approaches

In their analysis, the authors thoroughly examin the then-current situation in 2007 relative to the adoption of user-side measures for applying and enforcing any type of legal vehicle regulating ABS aspects, law or contracts. They find very few actual user-side measures adopted in any country. Returning to this question two years later in 2009, the situation has changed very little (Young and Tvedt, 2009 p. 32). According to them, this result should not be

suprising as it reflects the very serious legal obstacles faced by most developed countries when trying to address user-side obligations. There is, however, an emergence of countries who rose to the challenge of dealing with the implementation of user measures, e.g. Norway and Japan (Young and Tvedt, 2009 p. 32). They demonstrate that the effective implementation of the Protocol will require that user countries should, in their legislation, policy or administrative measures, provide for the import of genetic resources from a state which requires prior informed consent to use or export. This import of genetic resources should only happen in compliance with the user, having the genetic resource in hand, would be bound by the conditions and limitations for the consent.

4.3.1.14 Provider Side Approaches

Provider countries should put in place requirements and procedures for obtaining prior informed consent (PIC) from government authorities and indigenous and local communities. There is also a need for requirements for the negotiations of Mutually Agreed Terms (MAT) and benefit sharing provisions with national authorities and other providers (Young and Tvedt, 2009).

4.3.1.15 Informational Mechanisms

Young and Tevdt (2009 p. 28) further argue that effective implementation of the international regime will also require the use of an ABS Clearing House Mechanism (CHM) or some other international communication mechanism, as an official source of information regarding every country's legal choices that are relevant to ABS. The underlying condition is that CBD countries would be willing to make specific commitments in order to ensure official accuracy of information as well as evidence required under both mechanisms. It would also ensure that they would consider the provider-side legal vehicle as a valid basis for enforcement, as well as for other legal action on the user side, so long as the provider/source country complies with the relevant prerequisites.

4.3.1.16 Use of an ABS Clearing House Mechanism (CHM)

The effective coordination of national measures to form an operational and functional ABS System appears to depend on the ability of user, providers, agencies, communities, NGOs, advisors, judges, arbitrators and others, from any CBD country, to obtain officially sanctioned information about the key matters of certainty and evidence required by each country, with specific regard to access to, collection and utilization of its genetic resources (Young and Tdvet, 2009 p. 53). They, therefore, argue that the use of an ABS-CHM will enhance functionality and that such a mechanisms should be the primary vehicle for international implementation of the functional elements of cross-border implementation of the Nagoya Protocol.

4.3.1.17 National Decision-Making Procedures

Effective implementation will require that all countries adopt, enact or otherwise ensure that these provisions form a part of their national legal basis which underlies ABS implementation and enforcement. This means that at the national level effective coordination, communication, consultation and cooperation amongst all the national stakeholders, must be in place (Young and Tvedt, 2009 p. 54).

4.3.1.18 Information on Evidentiary Rules

It is necessary for users and all other parties and decision-makers to know what specific evidence is needed (on both provider-side and user-side) to demonstrate that a particular user complied, or failed to comply, with national law. There are clear rules as to what kind of proof must be presented in order to meet the “documentation of source“ requirements and a specific benefit-sharing amount (or standard for determining the amount in each case) and/or performance that would be required where a user could not make the above proof (Young and Tvedt, 2006, p 49).

4.3.1.19 ABS Ombudsman

Young and Tevdt (2009 p. 52) propose the establishment of an ABS Ombudsman as inevitable, during the process of implementation and beyond. Parties to the Nagoya Protocol will be expected to operate in a coordinated manner, applying and enforcing legal requirements across national borders. It will also be necessary to develop some mechanisms to facilitate cross border communication and functionality.

The ABS Ombudsman should be a permanentinstitution working in the field of ABS, and chosen for credibility of balancing ABS and enjoying ABS-relevant expertise.

4.3.1.20 Communication Processes and Strategies and Disclosure Requirements

Another key international element of any cross-border legal relationship is the need for official communication between the various users, providers, intermediaries, countries and others that are directly involved in each ABS transaction. This will include disclosure requirements (Young and Tvedt, 2009 p. 54).

4.3.1.21 Enabling Bilateral Action

Through bilateral discussions, two countries can determine key factors, including some of the matters identified as essential certainties for the development of any ABS relationship. Such negotiations can “prepare the way” for the negotiation of particular ABS contracts by individuals and entities from the two countries, as well as helping to protect the parties against

misunderstandings and allegations of bad-faith and/or biopiracy that may arise where the individual negotiation goes forward without confirmation of key certainties (Young and Tvedt, 2009 p. 54).

4.4 CONCLUSION

The literature search points out two major issues:
The empirical framework provided by Richerzhagen (2007) has not been used by workers to carry out and advance the assumptions contained in, or underlying, her work, and no literature that further utilised her work later is evident. The search, however, also provides ample indication that the work of Richerzhagen (2007) provides the most comprehensive and systematically structured framework to analyse the effectiveness of ABS regimes at the national and international levels up to the current time.

The literature review reveals that over the years there has been a significant effort towards building a body of knowledge on ABS implementation globally. It also elucidates the fact that there has been no development of indicators for ABS implementation in a systematically and empirical manner based on an analytical framework as provided by the critical factors.

The three cases studied represent the realities and challenges facing many provider and user countries in terms of regulating ABS at the national level. The other cases in general, and the three cases discussed in particular, have pointed out a number of potential indicators. There was a deliberate attempt to restrict the literature search to the most up-to-date analysis of ABS legal instruments at the time of the study. The author has restricted himself to those relatively new or recent literatures on ABS regime. Since the Nagoya Protocol was adopted before the development of the indicators and given the centre stage role of the Nagoya Protocol in the ABS debate some indicators, therefore, also had to be relevant to the implementation of the Nagoya Protocol. It can be inferred that some of them relate to the critical factors either directly or indirectly and thus, hopefully with some modifications where necessary, can be developed into useful indicators.

It was decided to enlarge the scope of the literature review to include literature not only on ABS alone, but that would also identify whether studies or literature in New Institutional Economics (NIE) theory existed that could have potential indicators on the critical factors themselves as opposed to simply looking at existing ABS regimes. This part of the literature search is discussed in the chapter on NIE.
The information and insights contained in this chapter and that were aquired from expert interviews will form the basis for the questionaire for the global survey on ABS.

CHAPTER 5

METHODOLOGY

The end justifies the means or does the means justify the end?

~Anon

5.1 INTRODUCTION

The present study has investigated the critical factors necessary for accessing the effectiveness of ABS instruments at the national and international levels. It further seeks to develop indicators for the critical factors and determine whether the indicators can be used to monitor progress in a country in order to determine the extent of development and implementation ofthe national ABS policy and legal framework in a given country.

In order to develop these indicators a number of expert interviews were completed which provided an initial set of potential indicators for critical factors as well as providing additional critical factors. This outcome of this information eventually delivered the basis of the questionnaire that was used in the international online survey on ABS. The final steps of the study consisted of the interviews for the Namibia case studies as well as the desk study for the institutional learning objective of the study.

5.2 GLOBAL AND NAMIBIA EXPERT INTERVIEWS

Expert interviews were undertaken internationally with knowledgeable individuals in the field of ABS and another series of interviews were done with experts in Namibia. Twenty five (25) people from Namibia were contacted and interviewed. Their expertise was on ABS but also included related expertise in terms of the development of policies and laws from different sectors within Namibia. Table 1 below provides a breakdown of the technical details of the participants in the Namibian and global expert interviews on the critical factors.

The objective of the interviews was to seek their opinion on:

1. The critical factors and their relevance to Namibia, and,
2. The changes in Namibia since independence to date in terms of developing, implementing and generally dealing with, ABS.

Thirty five (35) ABS experts from various countries and international organizations were contacted and interviewed for the global ABS expert view assessment.

The objective was to seek their opinions on:

1. The critical factors and the assumptions about the critical factors,
2. The definitions on what effective ABS implementations means, and,
3. Whether external and internal factors have an impact on the critical factors.

Following on from these interviews the critical factors were discussed and further explored, with a view to establish additional critical factors, as well as to develop potential draft indicators.

Table 5.1 Technical Details of the Face-to-Face Expert Interviews that Preceded the Online Survey

TECHNICAL DETAILS OF THE FACE TO FACE EXPERT INTERVIEWS THAT PRECEDED THE ONLINE SURVEY		
Tools used	**Namibian Survey**	**International Survey**
Literature review	Yes	Yes
Face to Face interviews	Yes	Yes
Participants profile	ABS experts from a range of sectors in Namibia: • ABS Chief Negotiators (Namibian) • Research and Academia • Industry • Indigenous and Local Communities • Inter-Governmental Organizations • Private Individuals	ABS international experts from a range of sectors: • ABS Chief Negotiators • Research and Academia • Industry • Indigenous and Local Communities • Inter-Governmental Organizations • Private Individuals
Number of participants	25	35
Questionnaire used	Yes	Yes

5.3 GLOBAL ON-LINE SURVEY

A Draft Survey was designed based on the outcome of preliminary international interviews. The Draft was sent out to a number of people from various backgrounds for testing, including a few from the ABS sector. This was done to determine the readability, coherence and structure of the Draft Survey. The Draft Survey was then further subjected to a workshop on ABS in Namibia to further strengthen it before it was finalized. The questionnaire contained a section establishing the demographics of the participants, followed by questions on what constituted the effectiveness of ABS. It then proceeded to assess the importance of the indicators derived for each critical factor based on a likert scale. This section concluded with a question on whether there were other potential indicators. Potential indicators were then

developed for each critical factor. Some critical factors ended up with over thirty (30) indicators of effectiveness of ABS. The lowest number of indicators for the critical factors was eight (8). The questionnaire concluded with an assessment of whether the critical factors were important at the national or international level, as well as the importance of the external and internal factors that impacted the critical factors. See Appendix 1 for the questionnaire for the global survey on ABS.

The population was comprised of delegates who participated in ABS-Working Groups at the 6th, 7th, and 8th sessions, and that were mandated to negotiate the international regime on ABS, now is known as the Nagoya Protocol on ABS. The rationale for utilizing these groups was based on the premise that:

1. The concrete elements of the International Regime had started emerging at ABS Working Group 6; and,
2. It can be argued that those delegates who participated in the Nagoya Protocol were, at the time, probably the most knowledgeable individuals, globally, on the current state of affairs on ABS and the Nagoya Protocol implementation at all levels.

The survey also included persons who were knowledgeable about ABS but who were not involved in the ABS negotiations. Table 5.2 indicates the technical details of the global online survey.

Table 5.2 Technical Details of the Online ABS Global Survey

Tool used	SurveyMonkey complete the survey https://www.surveymonkey.com/s.aspx?sm=aBZLU_2fRX_2bUFfD7_2byq1JLvg_3d_3d
Approximate number of addressee	About 1035
Period	11 November 2011 – 9 December 2011
Number of questions	31
Number of questions evaluated for the study	30
Statistical analysis software	SPSS 21 Microsoft Excel 2007

The above methodologies were used to address Strategic Objectives 1 – 5

5.4 INSTITUTIONAL LEARNING: THE CASE OF THE ABS NEGOTIATIONS WITHIN THE CONVENTION ON BIOLOGICAL DIVERSITY

A review of literature was carried out on institutional learning in general and also on the CBD and other Intergovernmental Organizations in particular. Some elements on institutional learning were included in the Namibian expert questionnaire, in order to track the institutional changes in Namibia and the learning that influenced those changes within Namibia.

5.5 DATA ANALYSIS

The data acquired from the online survey were ordinal i.e. ordered, or the classification of cases into a set of ordered classes, such that each case was considered equal to, greater than, or less than, every other case. Given the ordinal nature of the data, parametric statistics could not be performed. The data were analyzed using the SPSS 21 statistics program and Windows Excel 2007. One dimensional descriptive statistics such as frequency counts, cumulated frequencies and median (appropriate measure for mean value for data with ordinal scales) were carried out.

All variables were tested for normal distribution with the Kolmogorov-Smirnoff test[12] and it was found that they were not normally distributed (Marusteri and Bacarea, 2010). The sample size was relatively small and data characteristics i.e. non-normally distributed and scale, meant that bivariate evaluations methods were chosen to analyze patterns in the data (Norman G, 2010). Table 5.3. Show the statistical measures applied in the evaluation of the online survey on ABS.

Table 5.3 The Statistical Measures Applied in the Evaluation of the Online Survey

Statistical measures applied in the evaluation of the online survey			
	Dichotomous	Nominal	Ordinal
Dichotomous	Fisher's exact test	Contingency-Coefficient	Mann-Whitney U test
Nominal	X	(Not applied)	Kruskal Wallis-Test
Ordinal	X	X	Kendall's Tau –C

5.5.1 The Chi Square Test

The chi-square test was used to determine whether there was any relationship between two categorical variables. The Chi Square Test assumes that the expected value of each cell is five or higher.

[12] This test compares the cumulative distribution of the data with the expected cumulative normal distribution, and base its p-value simply on the largest discrepancy.

5.5.2 Fischer's Exact Test

This test was used on the data. The Fisher's exact test is used when there is a need to conduct a chi-square test, but one or more of the cells have an expected frequency of five or less. The chi-square test assumes that each cell has an expected frequency of five or more, the Fischer's test however has no such assumption and can be used regardless of how small the expected frequency is. In SPSS, it is possible to conduct a Fisher's exact test on a 2x2 table, and these results are presented by default.

5.5.3 Measure of Association

To determine whether, in any particular question, sub-population 1 tended to have higher (or lower) scoring for this item than sub-population 2. A measure of association was used rather than a formal test for differences (Clason and Dormody, 1994). This was due to the fact that the discrete and ordinal nature of the responses restricted the measures that could be used. Kendall's tau coefficient was an appropriate choice when the sub-populations were ordinal in some sense (Clason and Dormody, 1994; Goodman and Kruskal, 1979).

The tau test is used to evaluate whether the results can be generalized to the population. In the Kendall's tau the denominator is more complex, resulting in a statistic that is more 'conservative' (typically lower in value) than gamma. Gamma is calculated by counting the number of concordant pairs of cases in a contingency table, subtracting from this the number of discordant pairs and then dividing the result by the total number of pairs. This has to do with tied pairs.Gamma does not consider tied pairs while tau counts them negatively. So, tau will only reach 1.0 when all of the cases in a table are on the major diagonal of the table, while gamma can reach 1.0 with cases off the major diagonal (Prysby and Scavo, 2004, Brosius 2007). Kendall's tau is often reported in two variations: tau-b and tau-c.

Tau-b is used for square tables (tables where the rows and columns are equal), while tau-c is used for rectangular tables, which don't have major diagonals.

Tau-b is computed as the excess of concordant over discordant pairs (P-Q), divided by a term representing the geometric mean between the number of pairs not tied on x (X_0) and the number not tied on y (Y_0) :

$$\text{tau-b} = (P - Q)/ \text{SQRT}[((P + Q + Y_0)(P + Q + X_0))] \text{ (Liebetrau, 1983)}$$

Table 5.4 Type of data calculated by tau-b

CITY SIZE BY RIOT INTENSITY	City Size 1	City Size 2	Row Totals
Riot Size 1	1	0	1
Riot Size 2	3	4	7
Column Totals	4	4	8

Source: Garson (2013)

When a table is square, tau-b is virtually the same as tau-c (Prysby and Scavo, 2004, Nelsen 2001). Table 5.4: Type of data calculated by Kendall's tau-b.

Kendall's tau-c, also called Stuart's tau-c, is a variant of tau–b for larger tables. It equals the excess of concordant over discordant pairs times another term representing an adjustment for the size of the table.

$$\text{tau-c} = (P - Q)*[2m/(n^2(m-1))] \text{ (Liebetrau,1983): 73-74}$$

Where m is the number of rows or columns, whichever is smaller, and n is sample size (Garson 2013; Prysby and Scavo, 2004,) .

Table 5.5 Type of Data Calculated by Kendall's Tau-c[13]

CITY SIZE BY RIOT INTENSITY	City Size 1	City Size 2	City Size 3	Row Totals
Riot Size 1	6	0	0	6
Riot Size 2	0	5	4	9
Column Totals	6	5	4	15

Source: Garson (2013)

[13] This table simply serves to explain the difference between the type of sample that was used in this study and that is relevant for the use of tau-b and not tau-c. Thus tau-c was not calculated under this study.

5.6 FACTOR ANALYSIS

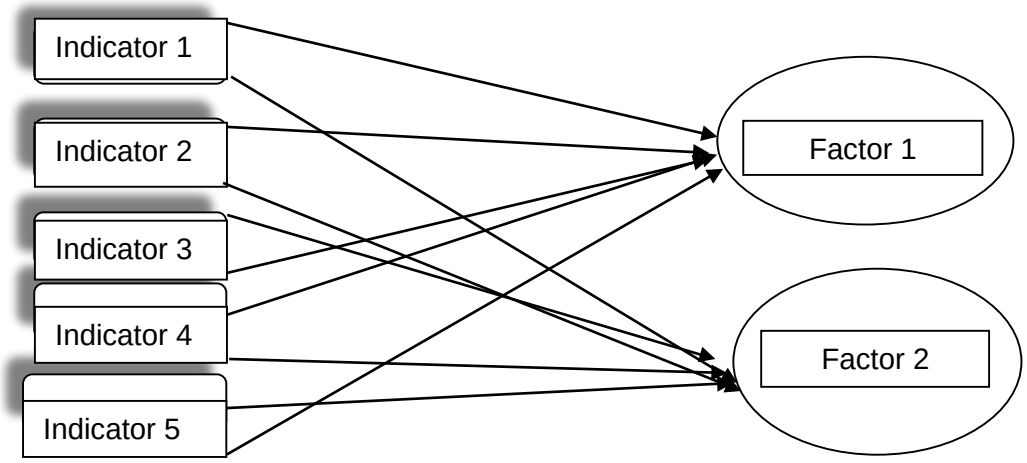
Factor analysis is used to determine what variable groups go together. It is a correlation of a matrix into a few major groups so that the variables within the groups are more highly correlated with each other than with variables in other groups.

A factor analysis is performed by examining the pattern of correlations (or covariance's) between the observed measures, thus indicating what variable groups go together or are linked (DeCoster, 1998). Measures that are highly correlated (either positively or negatively) are likely influenced by the same factors, while those that are relatively uncorrelated are likely influenced by different factors. Factor analysis thus uses correlations among many items to sort related variables into clusters called factors. (Neil, 2014).

The primary objective of the Exploratory Factor Analysis (EFA) in this study was to determine:

1. The number of common factors influencing the indicators derived for the critical factors. In other words, the aim was to determine whether the large number of indicators could be reduced to fewer indicators (variables) better suited for theoretical explanation.
2. The strength of the relationship between each factor and the indicators for the critical factors.

Principal Component Analysis (PCA) was used to derive a relatively small number of components that could account for the variability found in a relatively large number of measures (Domelen, 2013). The procedure used for this is called data analyses and is preferred when the researcher does not want to include all of the original measures in analysis but still wants to work with the information that they contain (Domelen, 2013). In PCA the principal components are based on the measured responses and, as they are defined simply as linear combinations of the measurements, they will contain both common and unique variance. This study was interested in deriving a set of indicators for the critical factors and, therefore, only data reduction was performed. This means that the number of variables i.e. indicators would be reduced to a number of factors (Neil, 2014).



Source: Adapted from DeCoster, J (1998)

Figure 5.1 The model for Principal Component Analysis

5.6.1 Test to Determine Whether Factor Analysis Can Be Undertaken On the Data

5.6.1.1 Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy

The KMO is a statistic which tells whether each factor has sufficient items. It compares the magnitudes of the observed correlation coefficients in relation to the magnitudes of the partial correlation coefficients i.e. the strength of the relationship between any two variables when the other variables are held constant (Phillips, 2013). This measure varies between 0 and 1 and values closer to 1 are preferable. A value of .50 is suggested as the minimum (Phillips, 2013).

5.6.2 Bartlett's Test of Sphericity

Bartlett's test is used to check that the original variables are sufficiently correlated. This test should come out as significant ($p < 0.05$), thus rejecting the null hypothesis, i.e. that the correlation matrix is an identity matrix in which all of the diagonal elements are 1 and all of the diagonal elements are 0 (Phillips, 2013).

Taken together as a group, the above tests provide the minimum standards which should be passed before a factor analysis (or a principal component analysis) could be conducted (Philips, 2013).

5.6.3 The Steps Involved in Performing Exploratory Analyses

5.6.3.1 Assumption Testing for Factor Analysis

The primary aim of the factor analysis for this study was to reduce the number of indicators derived for each critical factor to a manageable number of indicators. The assumptions made about the variables were that all variables were suitable for correlational analysis. i.e. they should be ratio/metric data or at least Likert data with several interval levels (Neil, 2014). This

assumption was met because the questionnaire was based on a Likert scale. Other assumptions were that the variables were normally distributed and that there were linear relations amongst the variables (Neil, 2014).

5.6.3.2 Type of Factor Analysis: Principal Component Analysis

The data was subjected firstly to the default setting for SPSS to use the Kaiser stopping criterion (i.e. all factors with Eigenvalues greater than 1) to decide how many factors to extract (UC, 2013). A scree plot or diagram was further employed to determine the number of factors to extract (UC, 2013). A second analysis was run with an extraction number set to a specific number of factors (UC, 2013).

5.6.3.3 Number of Factors & Items Removed

Factors for non-complex administrative procedures were set for 10 factors, whereas for all the other critical factors it was set at 5 factors. The rationale for this was that non-complex administrative procedures had 32 indicators, whereas the other critical factors had a lower number of indicators ranging from 18 to 8.

5.6.3.4 Rotation Method

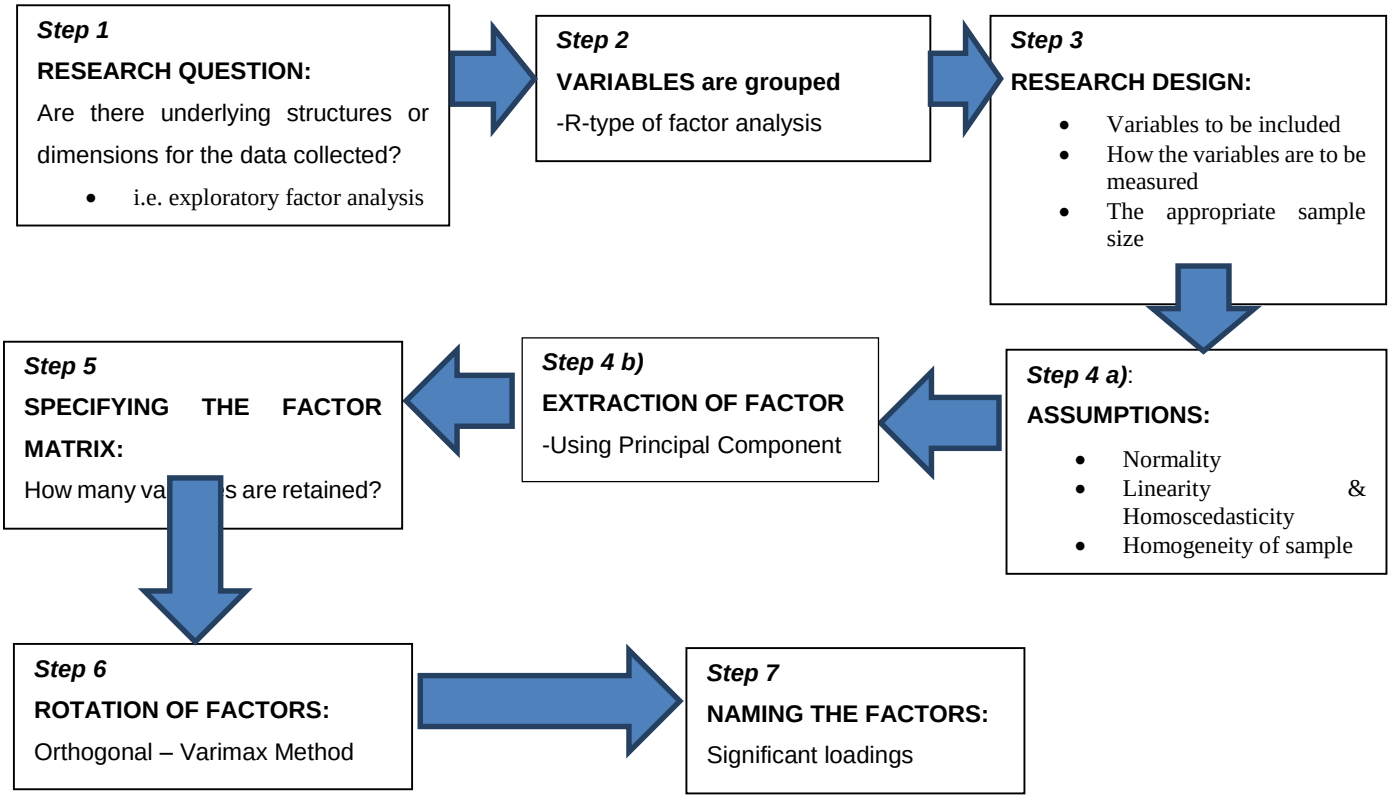
A rotation method gets factors that are as different from each other as possible and assists in the interpretation of the factors by placing each variable (in this case the indicators) on one of the factors (UC, 2013). It was decided to use the orthogonal rotation method i.e. Varimax rotation. The rationale for this was that most of the analyses used in published articles used Varimax rotation (UC, 2013). The rotated solution provided factor loadings for each individual indicator in the data set, which is what was used to interpret the meaning of the different factors (Brannic, 2013).

5.6.3.5 Factor Loadings

The factor loading show the loading or correlation for the respective indicators towards the derived factors. Factors with fewer than three (03) items are generally regarded as weak and unstable, whereas factors with 50 or more, indicate a desirable and solid factor.

5.6.3.6. Label Factors

The final step in an analysis such as this one, after analysis of the factor and the variables (indicators) that correlated highly with them, is to propose names or labels for the extracted factors. An attempt was made to provide labels for the factors that were an accurate, useful description of the underlying construct. The diagram below shows the various general steps involved in the application of factor analysis to a set of data.



Source: Phillips (2013)

Figure 5.2 The factor analysis process

5.7 NAMIBIA AS A CASE STUDY

A literature review was carried out on Namibia and the state of ABS in Namibia. An approach towards the interviews based on the critical factors and the results of the literature review was then developed**.** A number of individuals were selected for face-to-face interviews in Namibia. Another larger group received an open-ended survey questionnaire which was followed up with face-to-face consultations as necessary for clarification. The respondents were selected from Namibian experts that work in the Namibian environment sector and in the Namibian ABS field**.** A qualitative approach was used to analyze the results of the Namibian survey.

5.8 ORGANISATIONAL/INSTITUTIONAL LEARNING: THE CASE OF THE CBD AND THE NEGOTIATION OF THE NAGOYA PROTOCOL

This part of the project was based largely on the literature review, on institutional learning, on the experience of the researcher as a key negotiator in the process of negotiating the Nagoya Protocol, as well as on other CBD processes.

CHAPTER 6

RESULTS AND DISCUSSION OF THE ONLINE SURVEY ON ABS

An ounce of action is worth a ton of theory.

*~**Friedrich Engels***

6.1 INTRODUCTION

This chapter presents the results and discussion of the study for strategic objectives 1-5. The only results that will be dealt with in another chapter are those of the Namibian case study i.e. Strategic Objective 6.

6.2 CRITICAL FACTORS DERIVED FOR THE STUDY

The critical factors and indicators were derived from theory (chapter 2). The validity of the factors and the indicators was "tested" via the survey of various ABS experts.

6.2.1 List of Critical Factors

The critical factors are:

a) Good governance structure in both provider and user countries
b) Assigning property rights and intellectual property rights
c) Effective, functional and non-complex administrative structure/framework
d) Addressing or accounting for time lags in the generation and sharing of benefits
e) Effective measures to address information asymmetry in the ABS implementation framework
f) Efficient understanding of the ABS market structure within which the transaction must take place in the country
g) Presence of an effective and functional biodiversity valorization strategy at national level
h) Presence of effective and efficient measures to build trust (social capital) amongst stakeholders.

The critical factors (a) – (f) emerged from the theory and (g) – (h) emerged from experts interviews and were further elaborated upon through a comprehensive theoretical overview.

Literature on the countries that are already regulating access, who are planning to regulate access and those who may consider regulating access, were consulted. The main objective was to study the domestic ABS regulatory framework with a view to see whether elements or indicators emerged that could be viewed as important for the effective implementation of such frameworks. The indicators that emerged and which were tested in the online survey for importance, are reflected in Appendix 1: Questionnaire for the global online survey on ABS.

6.3 THE ONLINE ABS SURVEY - RESULTS

6.3.1 Demographics

The demographics of the online survey show that most participants classified their country as both a provider and user of genetic resources. The number of respondents classifying their country as either 'only provider' or 'only user' of genetic resources, were much fewer.

None of the different types of private sector categories - as determined from the literature review and reflected in the questionnaire - participated in the survey. There was provision made for respondents to select the category "other" for industry. Those that selected this category were few. In analyzing what sectors they represented, it became apparent that they were either individual consultants or legal experts operating in the private sector. This resulted in a situation where no data was available for the selected private sector categories. Consequently, no statistical analysis could be performed for this sector in terms of their responses vis-a-vis other categories of ABS players.

The research organization category type is largely dominated by the University sector.

A much larger percentage of respondents also served as negotiators of the ABS Nagoya Protocol than those who did not.

Relatively few Indigenous and Local Communities (ILC) participated in the online survey. Table 6.1 below depicts the demographics of the online survey.

Table 6.1 The Demographics of the online Survey

Categories	ABS Stakeholders	Total Response Count	% Response Count
Type of country (N = 135)	Provider	**22**	**16.30**
	User	**27**	**20**
	Both Provider User	**87**	**64**
Type of Civil Society (N = 37)	National	15	48
	International	19	52
Intergovernmental Organization (N = 26)	Specialized agency	**26**	**100**
Private Sector (N = 4)	Pharmaceutical	0	0
	Intermediary	0	0
	Biotechnological	0	0
	Neutraceutical	0	0
	Cosmetics and Health Care	0	0
	Other	4	100
Type of Indigenous and Local Community (N = 16)	Non-industrialized country	9	56.25
	Industrialized country	7	43.75
Type of research organization (N = 29)	University	**25**	**52.08**
	Botanical	4	8.33
	Museum	2	4.21
	Other	17	35.41
Negotiators (N = 143)	ABS Negotiators	**81**	**56.64**
	Non-Negotiators	**62**	**62**

6.3.2 The Definition of the Effectiveness of Domestic ABS Administrative, Policy and Legal Framework

The results (Table 6.2) indicate that the majority of the respondents viewed effective implementation of an ABS instrument as the ability of that instrument to set incentives to allow for the flow of benefits to both users and providers. This is followed by its ability to set incentives for the sustainable use and conservation of biodiversity. It is, therefore, suggested to keep the two top definitions as a single group which is focused on sustainable use, conservation and incentives for the flow of benefits to both provider and user of genetic resources. These are then followed by the group of the next two highest scoring definitions i.e. incentives for facilitating access to genetic resources and incentives for the assertion and recognition of the rights related to genetic resources and associated traditional knowledge. The definition that scored lowest is that of setting incentives to facilitate access to genetic resources.

Table 6.2 Definition of the effectiveness of ABS as Determined by the ABS Players

Definition option	Vote by key players (%)	Response count
Set incentives to allow for the flow of benefits to both users and providers of genetic resources	78.6	110
Set incentives for the sustainable use and conservation of biodiversity	77.9	109
Set incentives for the assertion and recognition of rights related to genetic resources and associated traditional knowledge	65.7	92
Set incentives to facilitate access to genetic resources	59.3	83
None of the above	0.7	1
Do not know	0.7	1

N = 140 who answered the question

6.3.3 The Types of User Firms Involved in the ABS market

Table 6.3 provides an overview of the results to the question: What type of firms are using genetic resources and associated traditional knowledge? It is clear that the categories Nutraceutical, Pharmaceutical and the plant breeding industry seem to be the most common ABS user firms.

Table 6.3 The Type of User Firms Involved in the ABS market (%)

Type of user firm	Percentage score	Response Count
Pharmaceutical	59.6	62
Cosmetic and Personal Care	55.8	58
Biotechnological	46.2	57
Plant Breeding and Seed Industry	51.9	54
All the above	46.2	48
Phytomedicine	39.4	41
Nutraceutical	33.7	35
Intermediary	39.4	27
Other	7.7	8
Do not know	2.9	3

N = 104 who answered the questions

6.4 RESULTS AND DISCUSSIONS FOR THE FACTOR ANALYSIS

6.4.1 Theoretical Underpinning for Factor Analysis on ABS

Based on the literature review, no previous study appears to have been done which attempts to derive indicators for the effectiveness of ABS policy and legal instruments through the use of critical factors. Therefore, due to a lack of previous critical factor analyses or analysis of indicators derived for the critical factors there are no previous conceptualizations and measurements of indicators for ABS. The literature simply indicates what factors may have led

to the success or failure of current ABS legal, policy and administrative instruments. These factors were used to derive the indicators.

6.4.2 Assumption Testing for Factor Analysis

The Kaiser-Meyer-Olkin (KMO) and Bartlett's Test is used to determine whether the data obtained can be subjected to principal component or factor analysis. High values (close to 1.0) generally indicate that a factor analysis may be useful for the data acquired. If the value is less than 0.50 the results of the factor analysis probably won't be useful (Phillips, 2013). From the results (Table 6.4) achieved from the KMO Bartlett's test the principal component analysis can be undertaken. All the criteria have been met with highly significant p values for all critical factors, as well as the importance of the critical factors at the national and international levels, and finally also, the internal and external factors that may impact the critical factors. This means that the strength (based on the score) of the relationship among the variables (indicators) is strong and appropriate for factor analysis. The only critical factor that just made the minimum criterion of .50 for the KMO test is that of noncomplex administrative structures. The other critical factors scored satisfactorily.

Table 6.4 Results of the KMO, Bartlett's Tests and Cumulative Variance of the Factor Analysis

Critical factors	KMO	Bartlett's Test	Cumulative Variance accounted for by extracted Factors
Assigning Property Rights and IPR	.84	670.29 and P = .000	82.22
Understanding of the Market Structure	.82	749.68 and P = .000	80.46
Accounting for time lags to benefits	.80	567.90and P = .000	72.61
Importance of critical factor at national level	.80	246.71 and P = .000	70.50
Measures to build social capital	.79	376.39 and P = .000	78.21
Valorization of biodiversity	.78	335.20 and P = .000	80.10
Addressing information Asymmetry	.74	508.30 and P = .000	83.08
Importance of critical factors at international level	.72	288.93 and P = .000	83.36
External and internal factors impacting on critical factor	.62	315.37 and P = .000	68.19
Non - complex administrative structures	.50	1009.96 and P = .000	81.34

6.4.3 Type of Factor Analysis: Principal Component Analysis

The data were subject first to the default setting for SPSS to use the Kaiser stopping criterion (i.e. all factors with Eigenvalues greater than 1) to decide how many factors could be extracted based on Eigenvalues. A scree plot or diagram was further employed to determine the number

of factors to extract. A second analysis was run with an extraction number set to a specific number of factors.

The analysis of the Eigenvalues of all factors extracted indicated that all original variables (indicators) were correlated with the new factors derived, and that all variables (indicators) could be retained. It also demonstrated that more factors could be extracted than what had been extracted for all the respective critical factors. This meant that all the information contained in the original variables were now contained in the factors indicating that the data reduction objective had been met. Appendix 2 – Appendix 11 present the results for eigenvalues and the rest of the steps for the factor analysis for all the critical factors.

6.4.4 Number of Factors and Items Removed

The cumulative percentages achieved, indicated the cumulative percentages of variance accounted for by the current factors and by all preceding factors. This demonstrated the total amount of variance for which the extracted indicators accounted. The results showed that all the factors extracted accounted for a total variance above 70 percent. This was positive, except for the factors derived for the external and internal factors that could impact or influence the critical factors under investigation - of which the total cumulative variance accounted for 68.19 percent.

Factors for noncomplex administrative procedures were set at ten, whereas for all the other critical factors it was set at five. The rationale for this was that noncomplex administrative procedures had 32 indicators, whereas the other critical factors had a lower number of indicators ranging from 18 to 8. The results showed that some of the critical factors ended up with more than five indicators. This was due to the fact that during the analysis of the factors and the indicators that correlated most strongly to those factors, it became clear that some indicators could be stand-alone factors. Based on the results from the Eigenvalues, this could be allowed for since more factors could be extracted than were set.

Since the ultimate aim would be to develop indicators for the critical factors, it was decided to retain all original indicators as sub items under the factors that emerged out of the factor analysis. The different countries which could find the derived indicators useful would be at different stages of development and, therefore, the choice would be left to them as to what sub-items under the indicators they would choose.

6.4.5 Rotation Method

A rotation method gets factors that are as different from each other as possible and assists in the interpretation of the factors by placing each variable - in this case, the indicators - primarily with one of the factors. It was decided to use the orthogonal rotation methods, i.e. Varimax rotation. The rationale for this was that according to UC (2013) most of the analyses used in published articles where factor analyses were used in the methodology, used the Varimax rotation as a preferred rotation.. The rotated solution provided the factor loadings for each individual indicator in the data set, which was what was used to interpret the meaning of the different factors.

6.4.6 Factor Loadings

For factors with fewer than three items, .03 was generally regarded as weak and unstable, whereas factors with .50 or more indicated a desirable and solid factor (reference). Most factors indicated very strong factor loadings, i.e. above .50

Table 6.5 Dimension Reduction of Indicators for the Critical Factors

Number of Factors derived	Critical Factor	Initial total indicators before reduction
7	Good governance structure in both provider and user countries	18
5	Assignment of property rights and intellectual property	10
10	Effective, functional and non complex administrative structure/framework	32
5	Addressing or accounting for time lags to the generation and sharing of benefits	17
5	Efficient understanding of the ABS market structure within which the transaction must take place in the country	13
6	Effective measures to address information asymmetry in the ABS implementation framework	11
5	The presence of an effective and functional biodiversity valorization strategy at national level	13
5	The presence of effective and efficient measures to build trust (social capital) amongst stakeholders	8

Indicators were developed for the critical factors, and after data reduction, these were reduced to a smaller number of factors. Table 6.5 showed the overall number of factors (reduced indicators) that emerged from the initial number of indicators. It was evident from Table 6.5 that the factors derived had reduced the number of indicators, from fairly large to more manageable numbers. Notably, the indicators for administrative complexity and good governance reduced from 32 and 18 to 10 and 7, respectively.

The aim was to reduce all the indicators from the original numbers to at least five or 10. This was achieved for all the indicators except for good governance structure and information

asymmetry, and was due to some of the remaining indicators not fitting into the factor after reduction. It was, therefore, decided to retain these indicators as factors, as they were still considered important for implementation.

6.4.7 Labeling of Factors Derived

The proposed names for the extracted factors were listed in the factor-derived columns in the tables. In some cases the top one or two loading items for each factor was used as the most appropriate name. An attempt was made to stipulate labels for the factors that would provide an accurate, useful description of the underlying construct. The tables below present the factors derived under their new labels for each of the respective critical factors. They also point to the number of indicators that are strongly correlated with them.

6.5 THE INDICATORS DERIVED FOR THE CRITICAL FACTORS

A general observation about the results obtained for all the indicators for the critical factors was that they illustrated that most responses viewed the proposed indicators as falling within the categories labled as either *very important* or *important*. Very few of the other categories were chosen as they were not seen as relevant.. The other categories were also scored generally lower than the two categories of *very important* and *important*. This overall trend seemed to indicate that the indicators were critical. This was despite the fact that some of them were scored lower by respondends of the global online survey but still fell within the category labeled *very important* or *important*.

6.5.1 Indicators for Good Governance Structure as a Critical Factor

The results illustrated that all the indicators for factor 1, factor 3, factor 4, factor 6 and factor 7 fell into the category *very important*. There were essentially only two indicators under factor 2 that fell within the category *important*. This seemed to indicate that it was more important to actually have the good governance structures in place, and that the intent to put these structures in place was not always enough. The same trend occured in Factor 5, i.e. a clear statement or intent to sign/ratify the Nagoya Protocol was labled as *important*. Yet, what was labled as *very important* was to actually sign and ratify the Protocol. Action was thus, considered as better than intent in this regard.

The results of the factor analyses responded closely to the indicators that scored highest in terms of frequency counts. Table 6 provides the indicators for good governance structure in both provider and user countries.

Table 6.6 Indicators for good governance structure in both provider and user countries

Factors and their Indicators	Categories of Importance					
	VI	**I**	**NI**	**NVI**	**DNK**	**RC**
FI User Measures						
User countries guarantee support for measures in provider countries to ensure functionality and effectiveness	**43.2 % (54)**	36.8% (46)	12.8% (16)	2.4% (3)	4.8% (6)	125
An assurance provided by the ABS framework that the user will comply with the terms of the provider country's chosen legal vehicle for ABS are clear	**49.2 % (60)**	36.1% (44)	7.4% (9)	0.8% (1)	6.6% (8)	122
Functional and effective user country measure in place	**50.0 % (61)**	41.0% (50)	5.7% (7)	1.6% (2)	1.6% (2)	122
Assurance that the user will perform his obligations	**51.2 % (64)**	40.8% (51)	5.6% (7)	2.4% (3)	0.0% (0)	125
F2 Domestic ABS instruments are in place						
A clear policy statement on putting in place a domestic ABS legal, administrative or policy framework	**52.4 % (66)**	31.8% (48)	6.3% (8)	1.6% (2)	1.6% (2)	126
Clear policies and strategy on ABS at the national level is in place	**61.8% (76)**	32.5% (40)	4.9% (6)	0.8% (1)	0.0% (0)	123
The process of developing its ABS legislation, administrative or policy measure has been initiated by the country	44.4% (56)	**49.2 % (62)**	5.6% (7)	0.8% (1)	0.0% (0)	126
Self-interest of the government of the provider for accomplishing ABS agreements	32.2% (39)	**42.1 % (51)**	19.0% (23)	3.3% (4)	3.3% (4)	121
F3 An effective, functioning and reliable legal system						
A reliable legal system	**76.4 % (97)**	23.6% (30)	0.8% (1)	0.0% (0)	0.0% (0)	127
For each transaction the relevant legal requirements and costs are clear at the national level	**47.2 % (59)**	45.6% (57)	5.6% (7)	1.6% (2)	0.0% (0)	125
F4 The political will and commitment towards ABS implementation						
Political stability prevails in the country	**53.2 % (66)**	39.5% (49)	6.5% (8)	0.0% (0)	0.8% (1)	124
Political consistency prevails in the country	**48.0 % (59)**	35.8% (44)	14.6% (18)	0.0% (0)	1.6% (2)	123
A clear policy statement that indicates political will and ability to engage on ABS issues	**53.2 % (67)**	29.4% (37)	12.7% (16)	2.4% (3)	2.4% (3)	126
F5: Signing and Ratification of the ABS Protocol						
A clear statement regarding the ratification/implementation of the ABS Protocol	33.1% (41)	**45.2 % (56)**	16.9% (21)	1.6% (2)	4.0% (5)	124
Signing and ratification of the Nagoya Protocol by the Government	**45.6 % (57)**	37.6% (47)	12.8% (16)	2.4% (3)	1.6% (2)	125
F 6: Rule of Law is guaranteed						
Access to courts for plaintiff from another country is assured	**43.2 % (54)**	37.8% (47)	15.2% (19)	0.8% (1)	32% (4)	125
Upholding the rule of law is guaranteed	**54.9 % (67)**	37.7% (46)	5.7% (7)	0.0% (0)	1.6% (2)	122
F 7: Assistance to rural providers of Genetic Resources						
Guaranteed equity and equality in terms of transactional assistance for traditional and rural providers of Genetic Resources	**50.0 % (62)**	35.5% (44)	9.7% (12)	1.6% (2)	3.2% (4)	124

VI = Very Important; I = Important ; NVI = Not Very Important; DNK = Do Not Know; RC = Response Count

*RC indicates the number of responses received per indicator

Only the category that received the highest number of responses is indicated per indicator

The principle indicators for good governance in both provider and user countries were shown to be the following:

- Functional and effective user country measures in place
- Domestic ABS instruments in place (provider measures)
- Reliable legal system
- Political will and commitment towards ABS implementation prevails in the country
- Signing and ratification of the ABS protocol
- Rule of law is upheld and is guaranteed
- Equity and equality in terms of transactional assistance for traditional and rural providers of Genetic Resources is guaranteed

The creation of legal certainty was found to be at the core of the negotiations for the ABS Protocol and, as the literature pointed out, was important for the functionality of ABS policy and legal instruments (Burton, 2009; Garforth et al 2005; Rukundo and Tvedt, 2010; and Young and Tvedt, 2009). The results of this study indicated that a reliable legal system scored the highest with 76.4 %. This was followed by the need for having clear policies and ABS strategies in place at the national level, backed by the necessary political will and commitment towards ABS implementation at the national level. This included political stability (53%) and consistency (48%). These indicators pointed to the fact that this critical factor set the stage for active engagement in the ABS sector at the national level by all stakeholders - especially the private sector. This was because legal certainty and political stability were found to be critical for providing an enabling environment for ABS transactions and economic development.

These measures as outlined in the study seemed to be more important for the national level of provider countries. User measures scored relatively low. This could be problematic for implementation of ABS. Young and Tvedt (2009 p. 49) have pointed out that the effective implementation of the Nagoya Protocol would require user countries to provide measures in their legislation, policy or administrative processes, which ensured that the import of genetic resources from a provider state had received prior informed consent. Furthermore, the use or export of these resources could only happen in compliance with such consent. It became important, therefore, that the good governance critical factor also took into account this reciprocal relationship between user and provider states. It also had to consider that the user countries had to be bound by the conditions and limitations of consent. (Tvedt 2009).

Generally, the study seemed to indicate that the current focus was more on good governance from the provider sides. The findings by Young and Tvedt (2009, p 13) support this view. In their examination of how user-side countries were doing in terms of putting in place measures

for applying and enforcing any type of legal vehicle that regulated ABS, the results showed that very few actual user-side measures were adopted in any country. They explained this was not surprising, given the very serious legal obstacles faced by most industrialized user countries when trying to address user-side obligations (Young and Tvedt, p.13).

The Nagoya Protocol has clear provisions for user-side measures and only the full and effective implementation of those measures would be able to signal good governance from user countries. This is important since the divide i.e. the arbitrary division of countries between user and provider countries has seemed to be disappearing, as shown by the results of the analysis of the demographics of this survey.

Good governance was also viewed as providing assistance to rural providers of genetic resources as ABS transactions would need to guarantee equity and equality (50%). Young and Tvedt (2009 p 31) have maintained that ABS is an undisputedly complex subject and that information asymmetries are prevalent. They also argued that as a result, in transactions between commercial entities and rural communities or individuals, the former often experience high levels of uncertainty regarding the capacity of the rural individuals or communities to effectively negotiate in their own interests. The same argument also applies on the side of communities. This uncertainty has posed a significant risk that an administrator or judge could find that the commercial entity had exerted an unfair level of control in the contractual negotiations due to the rural parties' lack of commercial knowledge (Young and Tvedt, 2009, p 31). Therefore, consideration of good governance dictated that assistance was required in terms of these negotiations.

There was no significant difference between the various categories of countries in terms of how they rated these indicators i.e. all p values were shown to be greater than .05. Some further associations were observed, however.

6.5.2 Indicators for the Assignment of Intellectual Property Rights as a Critical Factor

The critical factor assigning intellectual property and property rights seemed to be viewed as crucial for the effective implementation of ABS instruments. The indicators for this critical factor had the highest scores (frequency counts) for the category *very important* compared to the scores achieved by the other indicators for the critical factors.

Table 6.7 provides the results for the assessment indicators for assigning property rights and intellectual property rights, which demonstrated that the effectiveness of a domestic ABS

framework would be dependent on its ability to establish clear rules as to who had ownership over the genetic resources (who had the rights to transfer those resources (59.0%), which resources required permission or payment (66.4%) who had the right to grant PIC (75.9) and who had the right to grant access (77.6%)).

Table 6. 7 Indicators for the assignment of property and intellectual property rights

Factors and their Indicators	Categories of Importance					
	VI	I	NI	NVI	DNK	RC
F 1: Clear rules on who can issue PIC and MAT						
Clear rules on who can issue Prior Informed Consent	**75.9 % (88)**	19.0% (22)	3.4% (4)	1.7% (2)	0.0% (0)	116
Clear rules on who has the right to give access	**77.6 % (90)**	17.2% (20)	2.6% (3)	2.6% (3)	0.0% (0)	116
F2: Clear rules on how genetic resources and knowledge will be transferred to third parties						
Clear rules on how the transfer of genetic resources to third parties will be handled	**59.5 % (69)**	35.3% (41)	3.4% (4)	0.9% (1)	0.9% (1)	115
F 3: Clear rules as to which resources and knowledge require permission before accessing						
Clear rules as to which resources and rights require permission or payment	**66.4 % (77)**	27.6% (32)	4.3% (5)	0.9% (1)	0.9% (1)	116
Clear rules as to how shared genetic resources will be treated	**57.3 % (67)**	34.2% (40)	6.8% (8)	0.0% (0)	1.7% (2)	117
F 4 : Commercial rules and administrative rights are clearly defined						
Clear rules to ensure that private property rights are respected	41.7% (48)	**46.1 (53)**	7.8% (9)	1.7% (2)	2.6% (3)	115
Clear rules to ensure that confidentiality issues are taken into account by users and providers	**47.8 % (55)**	38.3% (44)	11.3% (13)	1.7% (2)	0.9% (1)	
Basic commercial and administrative rights are clearly defined	41.7% (48)	**47.8 % (55)**	7.0% (8)	1.7% (2)	1.7% (2)	115
Clear rules for disclosure requirements	**58.8 (67)**	30.7% (35)	3.5% (4)	2.6% (3)	4.4% (5)	114
F5 : Clear rules on the responsibilities for both providers and user regarding IPR and Property rights						
Clear rules on the roles and responsibility of both user and providers with regard to the above rights	**62.6 % (72)**	33.9% (39)	3.5% (4)	0.0% (0)	0.9% (1)	115

VI = Very Important; I = Important ; NVI = Not Very Important; DNK = Do Not Know; RC = Response Count

*RC indicates the number of responses that was received per indicator

The bold figures indicates the highest response count received per indicator

The main indicators for demonstrating the effectiveness of how a country assigned intellectual property rights in its domestic ABS legislative framework were shown to be a need for clearly defined rules on the following:

- Who can issue Prior Informed Consent and MAT
- How the transfer of genetic resources and knowledge will be transferred to third parties
- Which resources and rights require permission before accessing
- Commercial rules and administrative rights
- Roles and responsibility of both user and providers with regard to the above rights.

The indicators under Factor 4, i.e. commercial rules and administrative rights, were clearly defined. These all scored relatively lower than the indicators for this critical factor. It was also only under this Factor that results were obtained for indicators ranked only as *important* - since the indicators under all the other factors were considered *very important*. These indicators were shown to be at the core of industry since industry needed to be assured in this regard, in order to be able to generate benefits that would be equitable and fair (Young and Tvedt 2009, p48). Young and Tvedt (2009, p 48) further maintain that basic commercial and administrative rights are important for the private sector and, therefore, essential for the effective implementation of the international ABS regime (Nagoya Protocol). Thus, they argue for clarity on the basic commercial and administrative rights that are prevalent at the national level.

In this regard Young and Tvedt (2009, p 48) further maintain that it is important to determine how the general law of the provider country applies to ABS including:

- The ownership of various kinds of property and/or property rights;
- The particular rights of an owner under national law;
- The finality of contracts and administrative/legal decisions;
- The rights of the party to a final contract or under a final decision;
- Legal protection of the parties to contracts and administrative documents and negotiations (especially the parties that are least able to protect themselves); and,
- The system for oversight, implementation and/or enforcement, and for administrative or judicial action, within the country.

It was disappointing to see that these indicators were ranked as *not very important* as this would, in the opinion of the researcher, have serious implications for private sector participation in ABS transactions at the national level. Consequently, despite being ranked as *not very important*, these rights would need to be clearly spelled out and assured.

6.5.3 Indicators for Non-Complex Administrative Structure as a Critical Factor

From the results provided in table 6.8 it appeared that Factors 1, 2, 9, 10 and 11 were considered as imperative, because the indicators under them were all ranked *very important,* and they also had relatively high frequency counts.

The three indicators - Time frames needed to reach a decision for granting access to both commercial and non-commercial research, as well as for a decision on PIC and MAT and benefit-sharing under Factor 12 scored just under 50 %. They were viewed as important by respondents. This was also a crucial point during the negotiations for an ABS Protocol. The indicators reflected the fear by some parties to the negotiations that ABS instruments could simply restrict access to genetic resources, and thereby also cut off access for noncommercial research or basic research. Research was important for ABS and, without access, there could be no research, especially in provider countries. Moreover, no shared benefits would, in turn be generated, if access was not facilitated by domestic instruments. A delay in granting access could, therefore, also translate intoextended the time lags for the generation of benefits.

Factors 3 and Factor 7 dealing with decentralization and clear authority for decision making, as well as the use of model contractual clauses, voluntary codes of conduct guidelines and best practices and/or standards for access and benefit-sharing, were considered important but scored relatively low (frequency count). These were interesting results in light of the fact that decentralization for some countries, could enhance effective and efficient decision-making resulting maybe in more equitable sharing of benefits. Voluntary codes of conduct, guidelines and best practices, and/or standards for access and benefits-sharing, seemed to score low most probably due to the experience with the voluntary Bonn Guidelines.

The researcher is of the opinion that what would be needed next would be the implementation of legally binding measures. A case could be made for model contractual causes since they would help address information asymmetry for countries that are just now beginning to regulate access.

Many governments face a two-fold challenge, namely, to develop the relevant and complex laws and policy frameworks required in this case, and also how to make these legislative and policy structures functional and easily understandable (Garforth et al, 2005; Kamau and Winter, 2009; Burton, 2009 and Wynberg and Taylor 2004).

Thus, what was shown to be important for this critical factor was that the administrative structure would need to be simple, functional, effective, implementable and noncomplex (70.6%). It also need to be born in mind that simple could also be complicated in terms of implementation. Functionality would thus, need to be the final aim. Further, it would be important that the National Competent Authority for that system was identified and established (73.4%), and also that processes be clarified that would need to be undertaken at the national level, in order to acquire the resources needed or desired.

Table 6.8 Indicators for Effective, Functional and Non-Complex Administrative Structures

Factors and their Indicators	Categories of Importance					
	VI	**I**	**NI**	**NVI**	**DNK**	***RC**
FI Availability of information about the national system for access and use of genetic resources						
Availability of information about the national system for access and use of genetic resources	**63.9 % (69)**	33.3% (36)	2.8% (3)	0.0% (0)	0.0 % (0)	108
Access authorities should make available to the public information that is used as a basis for decision making and price setting	**41.5 % (44)**	40.5% (43)	13.2 % (14)	0.9% (1)	3.8 % (4)	106
There is a manual of the ABS process at the national level	35.2% (38)	**41.7 % (45)**	14.8 % (16)	5.6% (6)	2.8 % (3)	108
There is a guidance manual for the national ABS law, administrative or policy measure	38.3% (41)	**44.9 % (48)**	11.2 % (12)	5.6% (6)	0.9 % (1)	107
The fee structure for ABS permits is clear and transparent	**48.1 % (52)**	44.4% (48)	4.6% (5)	1.9% (2)	0.9 % (1)	108
F2 Effective and functional institutional administrative framework in place						
A clear, simple and functional institutional framework is in place	**70.6 % (77)**	25.7% (28)	3.7% (4)	0.0% (0)	0.0 % (0)	109
The National Competent Authority for granting access is established	**73.4 % (80)**	22.0% (24)	2.8% (3)	1.8% (2)	0.0 % (0)	109
It is clear what processes one must go through at the national level in order to acquire the resources and rights one desires	**65.1 % (71)**	32.1% (35)	2.8% (3)	0.0% (0)	0.0 % (0)	109
There is no confusion and uncertainty regarding the administrative rules and their implementation	**56.5 % (61)**	37.0% (40)	5.6% (6)	0.0% (0)	0.9 % (1)	108
A national ABS Multi-sectoral Committee/Council is in place	27.5% (30)	**40.4 %(44)**	19.3 % (21)	6.4% (7)	6.7 % (7)	109
F3 Decision-making on ABS application is clear and decentralized						
Decision-making on ABS application is decentralized and clear authority for decision making is given to lower levels	19.6% (21)	**38.3 % (41)**	27.1 % (29)	5.6% (6)	10.3 % (11)	107

F4 The Right to Appeal is provided for in case access is denied for reasons that the firm/users did not intend or cannot change						
A right to appeal is provided for in case access is denied for reasons that the firm/users did not intend or cannot change	31.1% (33)	**49.1 % (52)**	13.2 % (14)	2.8 % (3)	3.8 % (4)	106
F5 Stakeholders are identified and the competent authority is known						
Clear competencies of actors for access negotiators	38.0% (41)	**49.1 % (53)**	5.6% (6)	2.8% (3)	4.6 % (5)	108
There is a clear framework for stakeholder identification to facilitate effective implementation	36.4% (39)	**50.5 % (54)**	8.4% (9)	0.0% (0)	4.7 % (5)	107
Competent contact partner in provider country is established and is reachable	41.7% (45)	**45.4 % (49)**	8.3% (9)	2.8% (3)	2.8 % (3)	108
F6 One Permit system is being used						
The international recognized certificate is being used	38.1% (40)	**43.8 % (46**)	9.5% (10)	2.9% (3)	5.7 % (6)	105
A One-Stop-Shop for all permits and other requirements has been established	26.9% (29)	**45.4 % (49)**	19.4 % (21)	3.7% (4)	4.6 % (5)	108
Only one permit is required	19.8% (21)	**43.4 % (46)**	23.6 % (25)	4.7% (5)	8.5 % (9)	106
F7 Model contractual clauses are in use						
Model sectoral and cross-sectoral contractual causes are being used	19.8% (21)	**46.2 % (49)**	25.5 % (27)	4.7% (5)	4.7 % (5)	106
Model contractual clauses to ensure voluntary codes of conduct guidelines and best practices and/or standards for access and benefit-sharing are being used	19.4% (21)	**39.8 % (43)**	27.8 % (30)	6.5% (7)	6.5 % (7)	108
F8 Clear rules are being used for PIC, MAT and MTAs for applicants seeking access to GR and TK						
There are clear rules, guidelines and information on procedures for PIC, MAT and MTAs for applicants seeking access to TK associated with genetic resources	30.8% (33)	**67.0 % (71)**	3.7% (4)	0.9% (1)	0.0 % (0)	106
Grounds on which access can be denied or revoked should be mentioned and enforced in a transparent manner	**50.9% (55)**	44.4% (48)	3.7% (4)	0.9% (1)	0.0 % (0)	108
F9 Effective, simple and functional compliance measures are in place						
Tools to monitor compliance are in place and are not complex	**50.0 % (42)**	38.9% (42)	10.2 % (11)	0.0% (0)	0.9 % (1)	108
Check points are established	29.9% (32)	**54.2 % (58)**	13.1 % (14)	0.0% (0)	2.8 % (3)	107
F10 There are clear rules and/or processes for the involvement of the ILC for access to genetic resources and associated TK						
There are clear rules and/or processes for the involvement of the ILC for access to genetic resources and associated TK	**67.0 % (71)**	22.6% (24)	5.7% (6)	0.9% (1)	3.8 % (4)	106

F11 There are clear rules, guidelines and information on procedures for benefit-sharing						
There are clear rules, guidelines and information on procedures for benefit-sharing	**61.7 % (66**)	29.0% (31)	7.5% (8)	0.9% (1)	0.9 % (1)	107
F12 Clear time frames for processing and granting access are determined						
A clear time frame is provided of the time needed to reach the decision whether to grant access for non-commercial research	37.4% (40)	**49.5% (53)**	11.2 % (12)	0.9% (1)	0.9 % (1)	107
A clear time frame is provided of the time needed to reach the decision whether to grant access for commercial research	39.3% (42)	**45.8 % (49)**	10.3 % (11)	3.7% (4)	0.9 % (1)	107
	42.6% (46)	**43.5 % (47)**	9.3% (10)	2.8% (3)	1.9 % (2)	108

VI = Very Important; I = Important ; NVI = Not Very Important; DNK = Do Not Know; RC = Response Count
*RC indicates the number of responses received per indicator
Only the category that received the highest number of responses is indicated per indicator

The main indicators for indicating an effective, efficient and non-complex ABS administrative structure at the national level and to ensure effective implementation of its domestic ABS legislative framework were shown to be the following:

- Availability of information about the national system for access and use of genetic resources
- Effective and functional institutional framework in place
- Decision-making on ABS application is clear and decentralized
- A right to appeal is provided for in case access is denied for reasons that the firm/users did not intend or cannot change
- Stakeholders are identified and the competent authority is known
- One Permit system is being used
- Model contractual clauses are in use
- Clear rules are being used for PIC, MAT and MTAs for applicants seeking access to GR and TK
- Effective, simple and functional compliance measures are in place
- There are clear rules and/or processes for the involvement of the ILC for access to genetic resources and associated TK.

The results also indicated that it was not only important that the system was functional, but that information about the system was made available to potential users and other stakeholders (63.9 %).

The importance of model and contractual clauses for the private sector, and to some extent for the provider countries, was determined and elucidated by Täuber (2011). Young and Tvedt (2009) also found that the prevalence of recognized industry standards had potential to create an incentive for commercial users to be more open about the contents of their contracts. The results obtained for this indicator i.e. model contractual clauses, were relatively low. This was another area of concern, particularly as Young and Tvedt (2009, p 25) had pointed out that if parties to ABS contracts were willing to use model and default clauses, the regularity of ABS practices (thus beginning the process of defining “industry standards”) would increase without the need for any kind of compulsion or mandatory provisions. This willingness might be increased if the terms of implementation of ABS domestic instruments and the Nagoya Protocol states could agree that model clauses would automatically become valid and enforceable in their respective national courts.

The results also illustrated a high score for the indicators dealing with clear rules and guidelines and information on procedures and processes. This critical factor generated the most indicators and the literature also demonstrated that most of the challenges of implementation fell within the range of this critical factor. If coupled with lack of political will and commitment, and unclear property rights, it could significantly increase transaction costs and thus minimize the incentives for engaging in the ABS market of that particular country. It could also lead to non-compliance with the formal regulatory system if the costs of doing business outside the formal system were lower and more attractive.

6.5.4 Indicators for Time Lags to Benefits as a Critical Factor

The overall percentages (frequency) for the indicator of this critical factor are low. Only three indicators achieved a percentage of 50% (Table 9) - one under Factor 2 and two under Factor 4. The percentages ranged from 51% to as low as 32%. This was the first critical factor with such a spread. It was expected that indicators for Time Lags to Benefits would have received more scores. However, the study indicated that the process to get to the benefits was considered more important than the time that it took to obtain them.

These results raised the following questions: Were the results in this critical factor an indication that perhaps the current players were not the best at generating benefits, and were, therefore, not concerned about the time needed to receive the benefits? Were they thus more concerned about setting up the administrative and legal framework but not too concerned about its functionality? Was there, therefore, any consideration for managing the expectations of benefits?

From an industry perspective it could be argued that the sooner the benefits were derived the better,as that would signal return on investment. The less transaction cost were involved in the process to get to the benefits the better the turn-over would be. This result could have implications on the understanding of the importance of the time it may take to generate benefits.

It was interesting to note that benefits that should be allocated for biodiversity conservation measures scored high as an indicator under Factor 4. This denoted that the continued survival of biodiversitywas considered important and that it was not only the benefits that were important. This could also affirm that ABS should contribute to the sustainable use of biodiversity and thus biodiversity conservation, as pointed out by UNEP (2008). Issues of human security, revenue generation, poverty alleviation, food security and national economic development were seen as key issues by some countries, and thus viewed as the desired ultimate objective of policies of any national ABS policy, legal or administrative measure (UNEP, 2008). These issues were however integrally linked to the sustained conservation of biodiversity, toward which ABS could contribute through the generation of benefits.

The two most important indicators for the ministries of finances and economic development, i.e. the contribution to national economic development, state revenue generation, education and conservation were found under Factor 1 and they received the lowest percentage. It could be argued that the benefits from ABS should contribute directly and indirectly to the national development goals of any country. The question this finding posed was this: Was there an underlying assumption that ABS could not generate benefits or were these benefits difficult to translate into benefits for the national development agenda?

Table 6.9 Indicators for Measures to Address Time Lags to the Generation of Benefits

Factors and their Indicators	Categories of Importance					
	VI	**I**	**NI**	**NVI**	**DNK**	**RC**
F 1 Contribution of ABS to national economic and human development through monetary and non-monetary benefits						
Number of contracts negotiated under the ABS regime	16.8% (17)	**41.6 % (42)**	21.8% (22)	9.9% (10)	9.9% (10)	101
Amount of benefits registered as a result of the ABS regime	23.8% (24)	**43.6 % (44)**	19.8% (20)	4.0% (4)	8.9% (9)	101
Total contribution of bio-prospecting activities to the national budget	24.5% (25)	**32.4 % (33)**	23.5% (24)	8.8% (9)	10.8% ()	102
Total contribution of bio-prospecting activities to biodiversity conservation and education	30.7% ( )	**34.7 % (35)**	21.8% (22)	7.9% (8)	5.9% (6)	101
Number of nationals trained under ABS agreements	24.2% (24)	**42.4 % (42)**	22.2% (22)	6.1% (6)	6.1% (6)	99
F2: National strategies for the application of technology, skills transfer, biodiversity valuation and negotiating capacities in place						
Mechanism in place at national level to ensure that short term benefits do not overrule long term benefits	35.0% (36)	**37.9 % (39)**	18.4% (19)	1.9% (2)	6.8% (7)	103
A national strategy in place for the application of technology, skills and expertise transferred as benefits under ABS deals	**42.6 % (43)**	35.6% (36)	13.9% (14)	3.0% (3)	5.0% (5)	101
A strategy is in place for building capacity for negotiating ABS contracts (PIC, MAT and appropriate benefit-sharing)	**50.5 % (52)**	32.0% (33)	10.7% (11)	4.9% (5)	1.9% (2)	103
National and regional strategies in place to promote use of biodiversity for value creation and economic development	**45.6 % (47)**	34.0% (35)	15.5% (16)	1.9% (2)	2.9% (3)	103
A strategy for building capacities of negotiating skills for communities	**41.7 % (43)**	34.0% (35)	18.4% (19)	4.9% (5)	1.0% ()	103
F 3 Clear rules for scientific and research co-operation						
Clear rules for scientific, technical and research co-operation	40.8% (42)	**46.6 % (48)**	8.7% (9)	2.9% (3)	1.0% (1)	103
Assistance for the development of appropriate adaptation of relevant foreign technologies	26.7% (27)	**46.5 % (47)**	17.8% (18)	3.0% (3)	5.9% (6)	101
F 4 Clear rules and guidelines for benefit sharing are in place						
Mechanisms are in place to ensure that benefits are allocated for biodiversity conservation measures	**49.5 % (51)**	34.0% (35)	10.7% (11)	3.9% (4)	2.9% (3)	103
Clear understanding at the national level of the value chain of genetic resources in the ABS pipeline and the implications for benefit-sharing	**50.5 % (52)**	42.7% (44)	5.8% (6)	1.0% (1)	1.0% (1)	103
Clear rules and guidelines for how monetary and non-monetary benefits will be shared	**47.6 % (49)**	38.8% (40)	10.7% (11)	1.9% (2)	1.0% (1)	103
F 5 Checkpoints are established to ensure the transparency of the value chain through which the genetic resources is going to ensure appropriate benefit-sharing						
Checkpoints are established to ensure the transparency of the value chain through which the genetic resources is going to ensure appropriate benefit-sharing	**46.1 % (47)**	36.3% (37)	10.8% (11)	3.9% (4)	2.9% (3)	102

VI = Very Important; I = Important ; NVI = Not Very Important; DNK = Do Not Know; RC = Response Count

*RC indicates the number of responses received per indicator

The bolded figures indicate the highest response count received per indicator

The main indicators for illustrating how effectively a country would address the issue of time lags to benefit-sharing in order to ensure the effectiveness of its ABS domestic instruments were as follows:

- Contribution of ABS to national economic and human development through monetary and nonmonetary benefits
- National strategies for the application of technology, skills transfer, biodiversity valuation and negotiating capacities in place
- Clear rules for scientific and research co-operation
- Clear rules and guidelines for benefit sharing are in place
- Checkpoints are established to ensure the transparency of the value chain through which the genetic resources are going to ensure appropriate benefit-sharing
- Contribution of ABS to national economic and human development through monetary and nonmonetary benefits

Technology transfer as an indicator under Factor 2 did not receive a high scoring (42.6%) - although it was considered as *very important* by the respondents. Consideration was given to the possibility that herein could lie the missing link to transforming countries that were simply serving as providers of raw materials of genetic resources to become users of their own genetic resources. This could potentially also add value to their own biodiversity and contribute to a better understanding of the ABS markets and the flow of benefits through the value chain.

This issue was considered in article 16 of the Convention on Biological Diversity which dealt with access to, and transfer of, technology (CBD, 1992) and was raised to some level within the negotiations. It has however not received significant attention to date.. Technology transfer was also seen to be a serious cross-cutting issue with many aspects of the Convention and beyond the Convention. The results here pointed to the need to recommend the initiation of intergovernmental processes to negotiate and establish a United Nations Convention on the Transfer of Technology (UNCTT). While it had to be recognised that in some cases technology was present, what was most often lacking was the capacity, education and other skills required to make use of the technology, taking into account the socio-cultural developmental level of each country.

6.5.5 Indicators for Information Assymetry as a Critical Factor

The results of the indicators for this critical factor zoomed in on the two areas that produced some controversy during the negotiations of the Nagoya Protocol. These factors were all covered under Factor 1 (Table 6.10), and refer to the definition of the concept “genetic resources” (Young and Tvedt, 2009, p. 11) and the use of the definition of the concept

“utilization of genetic resources” (Young and Tvedt, 2009, p. 15) as provided by the Nagoya Protocol. These two indicators scored the highest, i.e. 54.5 and 62.4 respectively, and indicate the need for provider and user countries to work within the definitions provided by the Protocol. The danger of venturing into areas of information asymmetry, was an issue that was prevalent (given the lack of clear understanding what these concepts meant) before it was defined in the Protocol which was then adopted (Nagoya Protocol, 2010; Young and Tdvet, 2009, Tvedt and Rukundo, 2010).

Young and Tvedt (2009, p. 12) found that the definition “utilization of genetic resources” vastly simplified ABS, both practically and legally. It enabled parties to easily recognize each “utilization of genetic resources”, rather than guessing which biological material had been used and then prove how each of them would be utilized, i.e. “biological” or “genetic”. The approach of focusing on the “utilization of genetic resources” - which is more apparent on the user-side of each transaction than on the provider-side - may decrease the number of activities and approvals required at the time of collection, thus “streamlining the access process” without diminishing ABS coverage or obligations (Young and Tvedt, 2009, p. 14). It was therefore critical that, implementation of the Nagoya Protocol and related domestic ABS measures, would consider and support the needs of collectors and users who comply with ABS requirements. Implementation should also ensure recognition of their positive contribution to international conservation, sustainable use and equity (Young and Tvedt, 2009 and UNEP, 2008).

The second interesting point that respondents zoomed in on was the potential for information asymmetry with regard to Traditional Knowledge.

The researcher was aware of the perception, mainly amongst the industrialized countries, that traditional knowledge was a challenging and complex issue, not well understood, that it was codified and, therefore, difficult to regulate. The holders of traditional knowledge could accept these challenges and complexities. However, being a dynamic system, traditional knowledge was constantly evolving as with any other body of knowledge. Access to traditional knowledge could be regulated by existing measures or sui-generis systems, or a combination of both. This issue was recognised as a potential source of significant information asymmetry and was integrally linked to the flow of benefits from the ABS system to both humans and ecosystems. The indicator for this issue scored high (62.2%).

Effective communication was considered crucial for addressing information asymmetry. At the time of this study there remained many areas in the field of ABS that still needed to be

communicated. This was most probably why the indicator dealing with effective and functional communication channels under Factor 6, also scored high. All avenues of communication would need to be explored, in order to arrive at agreements that reduced information asymmetry and facilitated the flow of benefits to all parties at the table, including ecosystems.

Although Factor F 2, which dealt with the issue of technology transfer and the presence of a policy on science, research and technology, as well as its role in economic development, was marked as *important* and *very important*, it received a low score of below fifty (50) percent. It is important to build the national capacity for science, research and technology. Science and technology are the tools that can be used to generate added value to biodiversity. In the end, these value-added products can lead to increased benefits both monetary and otherwise.

The presence of a national ABS clearing house mechanism and a Communication Education and Public Awareness (CEPA) initiative (Factor 3) were also deemed *very important* but scored below fifty percent. These would be the potential tools to ensure effective communication channels for information sharing and redressing information asymmetry.

The indicator for the presence of an ABS National Advisory Council/Committee with a multi-disciplinary approach and multi-stakeholder representation under Factor 4, scored below forty - although deemed *important* by the respondents. In order to meet this indicator it would appear that the challenge that could face many countries would be if whether effective multi-stakeholder representation would allow for effective, transparent and non-biased representation by industry on these committees, and not be too heavily influenced by national politics.

Table 6.10 Indicators for Measures to Address Information Asymmetry

Factors and their Indicators	Categories of Importance					
	VI	I	NI	NVI	DNK	RC
F 1: The definitions in the Nagoya Protocol are being used especially for GR and Utilization						
Definition of the concept of Genetic Resources as provided for in the Nagoya Protocol is understood by all players	**54.5 % (55)**	32.7% (33)	8.9% (9)	1.0% (1)	3.0% (3)	101
The definition of the concept of the utilization of genetic resources as provided for in the Nagoya Protocol is understood by all players	**62.4 % (63)**	29.7% (30)	5.0% (5)	0.0% (0)	3.0% (3)	101
Clear rules, guidelines and process for dealing with traditional knowledge (TK) are in place	**62.2 % (61)**	26.5% (26)	5.1% (5)	1.0% (1)	5.1% (5)	98
F2: A clear policy on science, research and technology including tech transfer is being used						
A clear policy and understanding of technology transfer at national level	41.6% (42)	**45.5 % (46)**	11.9% (12)	1.0% (1)	1.0% (1)	101
There is a clear policy on science, research and technology and its role in national and economic development	**44.0% (44)**	43.0% (43)	10.0% (10)	2.0% (2)	1.0% (1)	100
F3: A functional CEPA initiative on ABS is in place at national level with a special focus on traditional knowledge						
A national strategy for awareness raising on the value of Traditional Knowledge associated with genetic resources in place	40.6% (41)	**41.6 % (42)**	10.9% (11)	5.0% (5)	3.0% (3)	101
A functional and effective Communication, Education and Public Awareness Initiative on ABS in place at the national level	30.7% (31)	**48.5 (49)**	16.8% (17)	0.0% (0)	4.0% (4)	101
F 4: Effective, efficient and functional institutional and administrative measures are in place						
A national ABS Clearing House Mechanism is in place	**45.5 % (45)**	36.4% (36)	8.1% (8)	4.0% (4)	6.1% (6)	99
An ABS National Advisory Council/Committee with multi-disciplinary and multi-stakeholder representation in place	37.0% (37)	**39.0 (39)**	16.0% (16)	3.0% (3)	5.0% (5)	100
F5: Measures are in place to reduce potential negotiating and other inequalities between stakeholders						
Measures are in place to reduce potential negotiating and other inequalities between stakeholders	**45.5 % (46)**	39.6% (40)	13.9% (14)	0.0% (0)	2.0% (2)	101
F6: Rules and guidelines to ensure that functional and effective communication process at the national level are clear						
Rules and guidelines to ensure that functional and effective communication process at the national level are clear	31.0% (31)	**52.0 % (52)**	12.0% (12)	3.0% (3)	2.0% (2)	100

VI = Very Important; I = Important ; NVI = Not Very Important; DNK = Do Not Know; RC = Response Count

*RC indicates the number of responses received per indicator

The bold figures indicate the highest response count received per indicator

The main indicators for indicating how effectively a country would address the issue of information asymmetry in order to ensure the effectiveness of its ABS domestic instruments were as follows:

- The definitions in the Nagoya Protocol are being used especially for GR and Utilization
- A clear policy on science, research and technology, including technology transfer, is being used
- A functional CEPA initiative on ABS is in place at national level with a special focus on traditional knowledge
- Effective, efficient and functional institutional and administrative measures are in place
- Measures are in place to reduce potential negotiating and other inequalities between stakeholders
- Rules and guidelines to ensure that functional and effective communication process at the national level are clear

6.5.6 Indicators for the Efficient Understanding of the ABS Market Structure as a Critical Factor

For all the other critical factors discussed so far, there was a fair mix of the indicators between the categories *very important* and *important*. For this critical factor all responses fell only in the *important* category and none fell into the *very important* category (Table 6.12). As was the case with indicators for the critical factor measuring time lags to benefits, the indicators for efficient understanding of the market structure for ABS scored lower overall compared to the scores obtained for indicators of the other critical factors.

The market for bioprospecting and the transactions that occur within it were shown to be complex. According to Artuso (1997b), a model involving monopolistic competition for a differentiated product would more accurately reflect the complex reality of the market for biological samples, extracts and derivative products. Source countries that could provide biological samples and derived products, and which combine relatively rare ecological characteristics with associated cultural and scientific knowledge, low production costs, a stable political environment and an understanding of the market, were shown to have the potential to obtain significant rents (Artuso, 1997b).

The indicator measures in place to resolve the cultural and social complexities and equity issues relevant to the ABS market at the national level, scored the highest (49%) under Factor 4. According to Sampath (2005, p. 75), the problem of uncertain product quality in the market for traditional knowledge-related information and tangible genetic resources - where the quality

of genetic resources samples or the reliability of the traditional knowledge-based information or both, could only be verified after an item has been traded - leads to problems of adverse selection and, in extreme cases, to a breakdown of market exchange. This problem is further confounded by the social and cultural complexities that may characterize the communities who provide the knowledge and the genetic resources, coupled with expectations of benefit-sharing. Sampath (2005, p.75) maintains that spot-market practices for the sale of tangible genetic resources and related information is common. As a result, uncertainty about quality prevails in these transactions. As Laird (1993 p.112) observes, “there is a tendency to overstate the importance of the genetic collections to pharmaceutical firms that launch such research and development programs and hence demand large sums of money that has already incensed many in the pharmaceutical industry.” It would, therefore, be important to address these issues to facilitate understanding of the market by communities and the public sector stakeholders.

Under Factor 1, Low transaction costs in the ABS market, the indicator identified as the bargaining and decision-making costs in the market for bio-prospecting, scored low at 45.8 %. Artuso (1997b) has pointed out that low production costs are an important incentive for ABS transactions to take place. Under Factor 3, the indicator, domestic public and private institutions, related to adding value to genetic resources, scored 44.8 %.

The demographics section results pointed out that many countries currently were both users and providers of genetic resources. This meant that at the national level, the capacity to add value to genetic resources became important. Artuso (2002) pointed out that for many developing countries, potentially beneficial bio-prospecting activities and projects might never be developed due to an inhospitable policy environment or lack of institutional or technical capacity within the country. An effective regulatory framework at the national and international levels, supported by innovative programmes and strategies at the national level for the development of biochemical resources could promote bio-prospecting investments, facilitate successful technology transfer and support the formation of a profitable industrial sector linked with the conservation and sustainable use of biodiversity.

The indicator results for this critical factor led to the question: why would they be considered only as *important* and why did they score relatively low in comparison to indicators for the other critical factors?

A number of reasons could be suggested, namely that:

1) The respondents may not fully have understood the issue of markets as they related to the ABS debate
2) The respondents may not fully have understood the process and strategies involved in ABS products making it through the value chain from the village member who collected it to the pharmaceutical plant, then to the marketer and onto the shelf in the pharmacy. Acknowledgement would need to be given to the fact that this was a long and complex process that required multiple skills and knowledge not related to everyday ABS negotiators or government officials.
3) The issue of markets and the actual process of generating the benefits, i.e. the value addition chain, had no real importance for the current players in the ABS debate. What was considered very important was to put in place the institutional, administrative, legal and policy framework.
4) Industry stakeholder could have provided a different perspective on this issue and the results may have varied. This stakeholder group was not, however, well represented in the survey.

The points above may have serious implications for the full and effective implementation of domestic ABS instruments and the Nagoya Protocol as outlined below.

The stakeholders who had, up until the time of writing, negotiated the Nagoya Protocol may not have been the right stakeholders to assure the implementation of the Protocol. There may, therefore, have been a need to bring new stakeholders to the negotiating table, both at the national and international levels, e.g. at the Intergovernmental Committee on the Nagoya Protocol (ICNP) level, as well as the national legislative design and implementation process.

A critical analysis of the stakeholders involved in the ABS debate and their main interests was considered necessary. Table 11 below provides a breakdown of the perceived main interests of the players in the ABS debate at the time of writing. Balancing these interests was a daunting task and the challenge was to interrogate to what extend these interests and perceptions would influence the design and implementation of ABS instruments at the national levels, either positively or negatively. Industry also needed to be considered very carefully as this group was mainly considered as a lobbying group and was, therefore, not really actively involved in the negotiations as the other groups per se, e.g. the Indigenous and Local Communities (ILC's). In addition, many, especially in the provider country "camps", considered industry representatives as the "enemy" or the "bad guy", or even as bio-pirates who had only been misappropriating genetic resources and traditional knowledge without the sharing of benefits.

Table 6.11 The Various Stakeholders Who Participated In The ABS Negotiations And Their Respective Interests

Stakeholder categories	Main interests
Provider countries	Regulate access to genetic resources and associated traditional knowledge Ensure acceptance of the necessary provider measures Ensure that equitable benefit-sharing is assured (conservation, use and benefits) Ensure biodiversity protection and conservation Regard industry as bio-pirates and, therefore, the enemy Had a weak industry lobby
User countries	Regulate access to genetic resource and associated traditional knowledge Ensure acceptance of the necessary user measures Ensure equitable benefit-sharing (conservation, use and benefits) Ensure interests of negotiators from a diverse range of government representations with different backgrounds Had a strong industry lobby
Research and Academia	Ensure that basic research is not compromised by the outcome of the negotiations
Legal experts (Provider, User countries and Private Sector)	Ensure legal certainty by the Protocol, as far as possible Check for legal precedents and ensur that legal systems of their countries of origins are adhered to and not infringed upon by the Protocol
Diplomats (both from provider and user countries)	Ensure the protection of sovereignty of the negotiating states
Intergovernmental organizations	Ensure the maintenance and protection of mandates and “turfs” of different intergovernmental organizations Ensure that already established institutions with similar mandates as the Protocol are not “hollowed out” or weakened by the Protocol
Indigenous and Local Communities	Ensure respect for their right to their traditional knowledge and respect for the related genetic resources Ensure the flow of benefits to them as providers of traditional knowledge and in some cases, of genetic resources Aim to secure their basic human rights and the right to self-determination
Industry and Private Sector	Ensure the protection of the interests of industry

Source: Own. Based on the expert interviews and the literature review

The results of the indicators for this critical factor further demanded another critical look at the ABS markets and market forces that would allow for the flow of benefits, ultimately the main objective of all the main players around ABS.

The industry sector was considered as the one category of ABS players who had the skills, know-how, technology, innovation and capacity to unlock the secrets of what markets wanted based, on their product research (Artuso, 1997b; Simpson et al., 19960).Industry had to be recognised as the one category of players that would be able to transform biodiversity and traditional knowledge into marketable, value-added products that could enter the market and thus allow for the flow of benefits – as well as generating benefits to providers before

marketable products had been reached (Artuso 1997b, 1999 and Rauser & Small, 2000). However, for this to happen, access to genetic resources and traditional knowledge would need to be granted on the basis of PIC and MAT, before benefits could be generated. The two aspects were recognised as being linked. The importance to all the other groups of industry also had to be recognised. It was imperative, therefore, to create a mutually supportive, integrated and beneficial relationship between all the stakeholders, if the ABS Protocol and domestic ABS instruments were to be effective and would allow for the flow of benefits through the establishment of the most appropriate incentives.

Table 6.12 Indicators For Efficient Understanding Of The ABS Market Structure

Factors and their Indicators	Categories of Importance					
	VI	**I**	**NI**	**NVI**	**DNK**	**RC**
F 1: Low transaction costs in the ABS market						
Low bargaining and decision-making costs in the bio-prospecting market	16.7% (16)	**45.8 % (44)**	16.7% (16)	5.2% (5)	15.6% (15)	96
Low monitoring and enforcement costs in the bio-prospecting market	25.0% (24)	**42.7 % (41)**	13.5% (13)	5.2% (5)	13.5% (13)	96
Pro-active policy approach towards the private sector and investors interested in investing in the bio-prospecting market at the local level	29.2% (28)	**42.7 % (41)**	15.6% (15)	3.1% (3)	9.4% (9)	96
Bargaining occurs under competitive conditions	12.6% (12)	**34.7 % (33)**	27.4% (26)	8.4% (8)	17.9% (17)	96
Low search and information costs in the bio-prospecting market	16.7% (16)	**38.5 % (37)**	24.0% (23)	7.3% (7)	13.5% (13)	96
***F2:* Measures are in place to allow investors to assess the commercial risks and opportunities in a country**						
Measures are in place to allow investors to assess the commercial risks and opportunities in a country	28.1% (27)	**46.9 % (45)**	10.4% (10)	0.0% (0)	9.4% (9)	96
Measures are in place to provide potential investors ideas about the potential value of ABS transactions in the market	21.9% (21)	**41.7 % (40)**	20.8% (20)	4.2% (4)	11.5% (11)	96
F3: A national ABS value addition strategy is in place in the provider country						
Market opportunities in relevant sectors are identified and fed into the national ABS strategy of the provider or user country	31.3% (30)	**45.8 % (44)**	15.6% (15)	1.0% (1)	6.3% (6)	96
Domestic public and private institutions add value to Genetic Resources	35.4% (34)	**44.8 % (43)**	10.4% (10)	0.0% (0)	9.4% (9)	96
Public and private sector incentives for undertaking bio-prospecting are in place	31.6% (30)	**38.9 % (37)**	16.8% (16)	5.3% (5)	7.4% (7)	95
F4: Potential challenging issues in the market for ABS such as TK and socio-cultural concerns are being addressed						
Measures are in place to resolve issues related to the nature of the market demand for traditional knowledge	28.1% (27)	**37.5 % (36)**	15.6% (15)	3.1% (3)	15.6% (15)	96
Measures are in place to resolve the cultural and social complexities and equity issues relevant to the ABS market at national level	30.6% (30)	**49.0 % (48)**	8.2% (8)	2.0% (2)	10.2% (10)	98
F 5: The biodiversity resource base is being monitored, evaluated, managed and used sustainabl,y and necessary conservation laws are in place						
Provider has a concept for resource evaluation	25.5% (24)	**42.6% (40)**	14.9% (14)	1.1% (1)	16.0% (15)	94

VI = Very Important; I = Important ; NVI = Not Very Important; DNK = Do Not Know; RC = Response Count

*RC indicates the number of responses received per indicator

The bold figures indicate the highest response count received per indicator

The indicators for the critical factor efficient understanding of the market structure for ABS were established as the following:

- Low transaction costs in the ABS market
- Measures are in place to allow investors to assess the commercial risks and opportunities in a country
- There is a national ABS value addition strategy in the provider country
- Potential challenging issues in the market for ABS such as TK and socio-cultural concerns are being addressed
- The biodiversity resource base is being monitored, evaluated, managed and used sustainably, and necessary conservation laws are in place

6.5.7 indicators for Valorisation of Biodiversity as a Critical Factor

As was the case with the critical factor market structure and time lags to benefits, the results for the indicators for the critical factor measures to address valorization of biodiversity achieved, on average, a low scoring. Only one indicator i.e., a national strategy for the promotion of the use of biodiversity for value creation and economic development, was in place under Factor 1, which achieved a score of 50.5 % (Table 6.13). This single indicator was interesting in that it recognizes the importance of having a strategy for the promotion of the use of biodiversity for value creation and economic development at the national level. One could, therefore, argue that it encapsulated all the other indicators.

The two indicators under Factor 4, i.e. domestic public and private institutions are involved in the identification of the commercial value of biodiversity; and the existence of potential research partners in the provider country are made public, received the next highest scores, of above 45%. These indicators were interesting because they both served as signals to others that the country had the capacity to carry out value addition processes. The link between, and the combination of, the critical factors - measures to address time lags to benefits; efficient understanding of the ABS market structure; and, measures to ensure value addition to biodiversity at the national levels - could in future constitute the steps towards the realization of true benefits from ABS as well as the integral and critical involvement of industry and those other stakeholders who know how to add value and create benefits, allowing for equitable sharing.

Table 6.13 Indicators for Measure to Address Valorization of Biodiversity in Provider Countries

Factors and their Indicators	Categories of Importance					
	VI	I	NI	NVI	DNK	RC
F1 A national strategy for the promotion of the use of biodiversity and ethno-botanical knowledge[14] for value creation, human and economic development is in place at the national level						
Economic valuation methods for valuing biodiversity with potential for ABS are being used	33.7% (32)	**38.9 % (37)**	12.6% (12)	5.3% (5)	9.5% (9)	95
A national programme to validate the importance of ethno-botanical knowledge for modern medicinal research in order to capitalize on the economic value is in place	**37.9 % (36)**	27.4% (26)	23.2% (22)	4.2% (4)	7.4% (7)	95
A strategy is in place to ensure that the stage of collection of plant material, screening, and advanced screening, advanced research and development are all conducted reputably and with quality of cooperation	**36.2 % (34)**	34.0% (32)	16.0% (15)	3.2% (3)	10.6 % (10)	94
A clear national process for identification of market opportunities in relevant sectors of importance to ABS is in place	29.8% (28)	**38.3 % (36)**	20.2% (19)	6.4% (6)	5.3% (9)	94
A national strategy for the promotion of the use of biodiversity for value creation and economic development is in place	**50.5 % (49)**	36.1% (35)	8.2% (8)	1.0% (1)	4.1% (4)	97
F2 Clear rules and guidelines on how the economic valuation will contribute to ABS permit decisions						
Clear rules and guidelines on how the economic valuation will contribute to deciding on ABS permits	**40.4 % (38)**	30.9% (29)	14.9% (14)	5.3% (5)	9.6% (9)	94
F3 A biodiversity inventory and investment centre is in use at the national level						
Efficient biodiversity infrastructure at domestic levels for inventories of genetic resources and traditional knowledge are in place	36.8% (35)	**40.0 % (38)**	11.6% (11)	5.3% (5)	6.3% (6)	95
An investment centre at national level which has information or a database on the species of interest and with potential for value addition	33.3% (32)	**38.5 % (37)**	14.6% (14)	4.2% (4)	9.4% (9)	96
A data base covering the economic valuation information is in place	42.6% (40)	**33.3 % (31)**	9.6% (9)	4.3% (4)	7.4% (7)	93
A list of species with potential investor interest and their current stages of research in terms of R&D	31.3% (30)	**37.5 % (36)**	20.8% (36)	5.2% (5)	5.2% (5)	96
F 4 Domestic public and private institutions are involved in the identification of the commercial value of biodiversity						
Domestic public and private institutions are involved in the identification of the commercial value of biodiversity	**46.4 % (45)**	36.1% (35)	10.3% (10)	3.1% (3)	4.1% (4)	97
F5 Existence of potential research partners in the provider country are made public						
Existence of potential research partners in the provider country are made public	34.0% (33)	**45.4 % (44)**	14.4% (14)	2.1% (2)	4.1% (4)	97

VI = Very Important; I = Important ; NVI = Not Very Important; DNK = Do Not Know; RC = Response Count
*RC indicates the number of responses that was received per indicator
The bold figures indicates the highest response count received per indicator

[14] This should also extend to ethno-zoological as well as ethno- fungal/bacterial/protists etc.

The ABS Capacity Development Initiative (CDI) (2010) indicated that the potential for ABS business partnerships to contribute to national and local economic development as well as poverty alleviation has not yet been realized and perhaps, as these results indicate, may also not be fully understood. This highlights the fact that there are a number of challenges that need to be overcome (ABS CDI, 2010), namely:

- The need to put in place effective ABS policies and legislative frameworks at the national level in order to serve as requirements for investment and valorization of genetic and biochemical resources
- Limited research and development capacities to identify and pre-process genetic and biochemical resources of (potential) commercial interest in the provider countries
- Insufficient focus on public investment in sustainable commercialization processes and business partnerships.

The ABS CDI (2010) proposed that one way of addressing these barriers and making positive steps towards successful partnerships, real value addition and ABS implementation, is through a hands-on exchange of information and views between key stakeholder groups - especially including business representatives from different ABS related sectors such as medicine, industrial enzymes, food and agriculture, healthcare and cosmetics.

Frank, open and exploratory discussions could lead to significant ABS partnerships and research collaboration. Sampath (2005, p. 26) pointed out that most existing, previous and on-going research collaborations were a combination of some sort of public-private or public-public forms of partnerships. There is however, also a need for private research collaboration**.** There have been very few cases where large pharmaceutical firms have approached developing countries directly for access to genetic resources and/or traditional knowledge (Sampath, 2005, p. 29). Most private research collaboration has taken place in the stages of intermediation where smaller firms/research institutes or botanical gardens have offered important services or through spot-market transactions. National agencies could begin to play the role of such intermediaries, or even replace them in certain circumstances, if they perform the same task of adding value. A good example of this has been INBio, which was established by the Costa Rican government (Sampath, 2005, p. 26).

These could all be elements contained in a national biodiversity strategy.

The ABS CDI (2010, p. 7) found that surprisingly different perspectives from public and private sector complemented each other well in an ABS Business dialogue. Requests from business to fill the gaps on capacity and infrastructure in provider countries in order to enter into ABS

agreements could, to some degree, be addressed with existing Official Development Assistance (ODA) instruments. There might however, be a need to develop more specialized instruments. It was understood that the private sector,especially in ABS, saw it as their responsibility to achieve sustainable development. This included employment creation and transfer of know-how and technology – provided adequate structures were in place (ABS CDI, 2010, p. 7).

Some of the conclusions of the ABS CDI (2010, p. 8) ABS stakeholder business dialogue points to the fact that private–public dialogue would be needed to bridge language differences and to work together jointly. A real opportunity for the private sector could exist if a robust framework that enabled action was put in place. The focus would need to be on creating conducive workable environments. It would further, be important to note that ABS CDI (2010, p. 9) maintained that neither the public, nor the private sectors could achieve ABS implementation and the generation of benefits on its own. This was because none of them had the means. Developing countries have been shown to lack institutional infrastructure, research and development capacities and know-how, and SMEs did not have the requisite financial and human resources to bridge the gap. Only very big companies could provide for this but they were not necessarily the ones that would bring sustainable development to local partners.

The business dialogue pointed out that the identification of local partners who could act as facilitators and thus, remove many challenges, barriers and hassle from the private sector, was needed (ABS CDI, 2010, p. 9). It would be important that these local partners were trusted by other stakeholders, especially local communities, who would in turn, need to be trained in applied research capabilities.
Throughout the negotiations, some stakeholders kept pointing out that an important aspect of ABS was that benefit-sharing as an incentive and tool for conservation and sustainable use at the local level. This importance could be increased if it was focused on the local level where people had the resource and tenure. Resource tenure was an important leverage to success both in partnerships and sustainability (ABS CDI, 2010, p. 9).

Finally, in order to ensure that practical rules and regulations supportive of business partnerships and which did not run counter to such partnerships, as well as research and development, and value addition, there was an urgent need for the private sector to advice on legislation/regulation, both at the national and international level. This pointed to a radical shift in the conduct of the meetings of the ABS Nagoya implementation process in terms of full and effective private sector engagement in the implementation process and the ABS policy arena.

The indicators for measures to address valorization of biodiversity in provider countries were:

- A national strategy for the promotion of the use of biodiversity and ethno-botanical knowledge for value creation, human and economic development is in place at the national level
- Clear rules and guidelines on how the economic valuation will contribute to deciding on ABS permits
- A biodiversity inventory and investment centre is in use at the national level
- Domestic public and private institutions are involved in the identification of the commercial value of biodiversity
- Existence of potential research partners in the provider country are made public

6.5.8 Indicators for Measures to Build (Trust) Social Capital as a Critical Factor

Table 6.14 illustrates that the three indicators that scored the highest as indicators for measures to build trust amongst the ABS stakeholders, were essentially the critical factors themselves, i.e. the indicators under Factor 1: good governance structures in provider and user countries (64.6 %); an effective, transparent legal, policy and administrative ABS domestic framework is in place (75.3); and, an effective and functional administrative procedures are in place (66.7 %). This was a confirmation that the effective presence and implementation of these three critical factors at the national level in and of themselves were important measures that engendered trust in the various stakeholders and, therefore, promoted effective implementation of ABS measures.

Factor 5 contained the critical factor measures to address information asymmetry (44.8 %), and the use of the Internationally Recognized Certificate (IRC). The IRC constituted a measure to address information asymmetry i.e. it reduced information asymmetry amongst the ABS stakeholders as the genetic resources moved up the value chain. The use of the IRC also scored relatively high (52 %).

It had to be noted that under the indicators for the critical factor relating to issues focused on addressing information asymmetry, the use of the definition of genetic resources and utilization of genetic resources scored the highest. Under this critical factor, the use of the IRC was the third specific element of the Nagoya Protocol mentioned as important for the effective implementation of the ABS instruments at national level.

This also had to be viewed while bearing in mind that the gap between provider and user countries was fast disappearing and, therefore, compliance measures would affect both provider and user countries.

It was also noteworthy that under Factor 4, the indicator A “Black List” of those firms and organizations that contribute to bio-piracy (including the end pharmaceutical companies who buy such genetic resources from intermediaries) was in place, scored relatively low (42.7 %), although it is considered as very important over all. It would have been expected that, given all the controversy around bio-pirates and misappropriation, especially at the onset of negotiations, it would have scored relatively higher. This result may have indicated a move towards maturity and mutual understanding amongst the ABS stakeholders, as well as the need to engender trust.

It was also noteworthy that the presence of a valorization strategy (Factor 2) as an indicator also scored relatively low (36.8 %). efficient implementation of a value addition strategy at the national level would thus serve as a signal that the transaction costs would be lower in a given country. The low rating of this indicator could have been because the search and bargaining costs would need to be addressed - as was discussed under the critical factor measures to address valorization of biodiversity in provider countries. The results here further confirmed that the actual measures necessary to signal that implementation had proceeded beyond simply putting in place the necessary legal and administrative frameworks seemed not to be receiving significant attention. This notion was further underscored by the two indicators under Factor 2, i.e. mechanisms to signal the quality of genetic resources to potential bio-prospectors are in place (45.3%); and a valorization strategy is in place (36.8%); which received a relative low scoring. The same applied to the indicators under Factor 3 and Factor 5, as all of these indicators had the commonality of serving as a signal to interested stakeholders that measures to address information asymmetry within the ABS policy arena and market was being addressed in a particular country, thus lowering transaction costs.

The rest of the indicators were all considered important and were subsets of measures to deal with information asymmetry. This served to facilitate the development of trust between the investor and the area in which he would be investing. In other words, the investor would be receiving the signal that transaction costs would be low because significant knowledge on the ground as generated by the implementation of these measures existed, and the investor would thus have confidence that ABS transactions could take place and the return on investment would be relatively assured.

These results seemed to indicate that some of the critical factors themselves were important in order to foster, engender and build trust amongst those at the ABS table, and that their implementation would ensure the effectiveness of ABS instruments at the domestic level.

This study recognised that the presence of networks and connections within the ABS market of any country builds social capital, specifically trust, as they provide platforms for dialogue and for the exchange of experiences. Social capital also includes the presence of relations of trust and mutual support, formal and informal groups, common rules and sanctions, collective representation, mechanisms for participation in decision-making and the presence of effective leadership within the ABS sector. Because partnerships are built upon trust, an important precondition for forging successful business partnerships would be information sharing and exchange with private sector companies, as well as dialogues with public sector institutions, that could frame, regulate, enable or support these partnerships (ABS CDI, 2010, p. 7).

It could be argued that the underlying goal of the Nagoya Protocol was to allow for the profitable development and equitable marketing of genetic resources and their biochemical compounds. That would have provided an economic and social incentive for conservation and sustainable use of local biodiversity (ABS CDI, 2010 p. 7). If the Nagoya Protocol would not then be utilised to create business partnerships between providers and users of genetic resources and associated traditional knowledge, then it would remain an empty shell. This would also be true for domestic ABS instruments. These partnerships however, would depend on how countries chose to deal with the role of the private sector, and related sectors such as research and academia, in terms of implementation of both the Nagoya Protocol and domestic ABS measures.

The ABS CDI (2010, p. 10) pointed out that the potential of ABS business partnerships to contribute to national and local economic development as well as poverty alleviation, was not yet being realised accross the board, especially in Africa. A number of reasons were given for this situation:

i) The absence of ABS policies and legislative frameworks at the national level as requirements for investment and valorization of genetic and biochemical resources.
ii) Limited research and development capacities to identify and pre-process genetic and biochemical resources of (potential) commercial interest in the provider countries
iii) Insufficient focus on and public investment in sustainable commercialization processes and business partnerships.

What the results under this critical factor, as well as in others, pointed out was that fundamental steps to bridging the gap between drafting legislation and inclusive implementation, had not been made. Moreover, the link between the public and private sector in the ABS policy arena in terms of real action on the ground, had also not been effectively made. The underlying suspicions that led to mistrust still seemed too strong to allow for the full realization by the

various parties involved, that these sectors needed each other, and that dialogues would highlight complementing perspectives among public and private sector actors. This understanding was also demonstrated by the ABS CDI (2010, p. 9). Effective implementation of the Nagoya Protocol and domestic ABS legislation would, thus require support and trust and would not simply be a matter of transposing the Nagoya Protocol into domestic legislation. That action would not be enough. The critical need was demonstrated to create an ABS framework that could handle, promote, enable and develop the interaction between providers and users, both at national and international level. The critical need for establishing enabling environments for small and medium-sized enterprises (SME) matched with the capacity of non-industrialized countries, and a focus on employment creation, as well as the transfer of know-how and technology, could not be over-emphasized (ABS CDI, 2010, p. 8).

In fostering trust there would also be the need to consider the language and concepts used by the various ABS actors. The deep-seated mistrust that crept into the ABS policy arena over the years, was sometimes fueled by misunderstandings of languages and concepts used by one stakeholder group. Effective dialogue in a positive and exploratory environment could allow for clarification and understanding of the needs and perspectives of stakeholders.

In order to have practical and supportive rules and regulations that would not run counter to business partnerships, an urgent need was indicated for the private sector to advice on legislation/regulation. For this to happen, all stakeholders would need to invest in measures that promote and enable social capital.

Table 6.14 Indicators For The Development Of Trust-Building Measures Among Stakeholders In The ABS Game

Factors and their Indicators	Categories of Importance					
	VI	I	NI	NVI	DNK	RC
F1 An effective, functional and efficient institutional, administrative, legal and policy framework is in place at the national level						
A good governance structure is in place at the national level	**64.6 % (62)**	31.3% (30)	2.1% (2)	2.1% (2)	0.0% (0)	96
An effective, transparent legal, policy and administrative ABS domestic framework is in place	**75.3 % (73)**	21.6% (21)	3.1% (3)	0.0% (0)	0.0% (0)	97
Effective and functional administrative procedures are in place	**66.7 % (64)**	29.2% (28)	2.1% (2)	1.0% (1)	1.0% (1)	96
F 2 A biodiversity valorization strategy is in place at the national level						
A valorization strategy is in place	34.7% (33)	**36.8 % (35)**	16.8% (16)	2.1% (2)	9.5% (9)	95
Mechanisms to signal the quality of genetic resources to potential bio-prospectors are in place	17.9% (17)	**45.3 % (43)**	28.4% (27)	3.2% (3)	5.3% (5)	95
F 3: Reputable networks of research collaborators with best practice codes are created at the national level						
Measures to ensure that the stages of collection of plant material, screening, and advanced screening, advanced research and development are all conducted with reputation and quality of cooperation	36.8% (35)	**44.2 % (42)**	10.5% (10)	2.1% (2)	6.3% (6)	95
Creation of reputable networks of research collaborators with best practice codes	36.5% (35)	**51.0 % (49)**	5.2% (5)	4.2% (4)	4.2% (4)	96
F 4: Measures to create social compliance within the ABS sector are in place at the national level						
A “Black List” of those firms and organizations that contribute to bio-piracy is in place (including the end pharmaceutical companies who buy from such genetic resource intermediaries)	**42.7 (41)**	20.8% (20)	18.8% (18)	6.3% (6)	11.5 % (11)	96
The development of ethical bio-trade guidelines and codes of conduct in country	38.5% (37)	**42.7 (41)**	16.7% (16)	1.0% (1)	1.0% (1)	96
F 5: Effective, functional and efficient compliance measures are being used including the internationally recognized certificate						
The internationally recognized certificate is being used	**52.1 (49)**	31.9% (30)	8.5% (8)	5.3% (5)	2.1% (2)	94
Measures are in place that deal with addressing information asymmetry	33.3% (32)	**44.8 % (43)**	13.5% (13)	3.1% (3)	5.2% (5)	94

VI = Very Important; I = Important ; NVI = Not Very Important; DNK = Do Not Know; RC = Response Count, F = Factor

*RC indicates the number of responses that was received per indicator

The bold figures indicates the highest response count received per indicator

The indicators for measures to build trust amongst stakeholders in the ABS game are:

- An effective, functional and efficient institutional, administrative, legal and policy framework is in place at the national level
- A biodiversity valorization strategy is in place at the national level
- Reputable networks of research collaborators with best practice codes are created at the national level
- Measures to create social compliance within the ABS sector are in place at the national level
- Effective, functional and efficient compliance measures are being used including the internationally recognized certificate.

The issue of social capital, especially trust, could then apply to all modes of coordination, cooperation, interaction, reputation, signalling, monitoring and compliance, as they are combined with contracts, in order to assist in minimizing transaction costs in any exchange. Moreover, it could be envisaged that companies would increasingly develop best practice standards associated with bio-trade, as an extension of ethical trading, good business practice and social responsibility, rather than for purposes of compliance with the CBD (Laird, 2008; Laird and Wynberg, 2008; Union for Ethical Biotrade, 2007).

6.6 CONFIRMATION OF WHETHER THE CRITICAL FACTORS ARE IMPORTANT FOR THE EFFECTIVE IMPLEMENTATION OF THE NAGOYA PROTOCOL AT THE NATIONAL LEVEL OR NOT

Table 6.15 below illustrates that the results followed the same trends as what was observed during the discussion on the indicators.

Factor 1 had only two critical factors ranked as very important - which all scored relatively low. All the other critical factors under this factor, however, were considered important, and none scored above fifty percent.

It should be noted that this Factor was the one that dealt with measures to unlock the flow of benefits from ABS through addressing information asymmetry and building trust amongst the ABS players.

Factor 2 and 3 all scored high and dealt with the critical factors good governance, non-complex administrative structures and the assignment of intellectual property rights.

Table 6.15 Importance of Critical Factors at the National and International Levels

Derived Factors and their Indicators	Categories of Importance					
	VI	I	NI	NVI	DNK	RC
CRITICAL FACTORS AT THE NATIONAL LEVEL						
F1: Measures to unlock the flow of benefits from ABS through addressing information asymmetry and building trust amongst the ABS players						
Measures to address time lags/timeline to benefits	29.9% (29)	**48.5 % (47)**	11.3% (11)	5.2% (5)	5.2% (5)	97
Measures to address information asymmetry	32.3% (31)	**49.0 % (47)**	11.5% (11)	1.0% (1)	6.3% (6)	97
Efficient understanding of the market structure	25.0% (24)	**45.8 % (44)**	17.7% (17)	6.3% (6)	5.2% (5)	96
Adding value to biodiversity at the national levels	**42.7 % (41)**	35.4% (34)	14.6% (14)	2.1% (2)	5.2% (5)	96
Measures to build trust amongst stakeholders at the national level	**39.6% (38)**	34.4% (33)	15.6% (15)	2.1% (2)	8.3% (8)	96
F2: An effective, functional and efficient institutional, administrative, legal and policy framework is in place						
Good governance structure	**73.5 % (72)**	24.5% (24)	1.0% (1)	1.0% (1)	0.0% (0)	98
Effective, functional and noncomplex administrative structure	**55.7 % (54)**	40.2% (39)	2.1% (2)	2.1% (2)	0.0% (0)	97
F3: Measures to assign property and intellectual property rights						
Assignment of property rights and IPR	**53.6 % (52)**	24.5% (24)	1.0% (1)	1.0% (1)	0.0% (0)	97
CRITICAL FACTORS AT THE INTERNATIONAL LEVEL						
F1: Measures to ensure an effective understanding of, value addition to biodiversity and build trust amongst the ABS players						
Understanding of the market structure	34.1% (31)	**37 % (34)**	16.5% (15)	5.5% (5)	6.6% (6)	94
Measures to add value to biodiversity	**42.6 % (40)**	30.9% (29)	18.1% (17)	3.2% (3)	5.3% (5)	93
Measures to build trust (social capital) amongst the different stakeholders	**38.7 % (36)**	31.2% (29)	17.2% (16)	3.2% (3)	9.7% (9)	93
F2: An effective, functional and efficient institutional, administrative, legal and policy framework is in place						
Good governance structure in provider countries	**69.5 % (66)**	22.1% (21)	8.4% (8)	0.0% (0)	1.1% (1)	95
Assignment of property rights and intellectual property	**57.9 % (55)**	24.2% (23)	13.7% (13)	0.0% (0)	4.2% (4)	95
Effective, functional and noncomplex administrative structure	**55.3 % (52)**	34.0% (32)	8.5% (8)	1.1% (1)	1.1% (1)	94
F3: Measures to address information asymmetry						
Measures to address information asymmetry	**42.4 % (39)**	33.7% (31)	17.4% (16)	4.3% (4)	2.2% (2)	92
F4: Measures to address time lags to the generation of benefits						
Measures to address time lags to benefits	**35.9 % (33)**	32.6% (30)	22.8% (21)	7.6% (7)	2.2% (2)	92

VI = Very Important; I = Important ; NVI = Not Very Important; DNK = Do Not Know; RC = Response Count

*RC indicates the number of responses received per critical factor

The bold figures indicates the highest response count received per critical factor

6.7 CONFIRMATION OF THE IMPORTANCE OF CRITICAL FACTORS AT NATIONAL AND INTERNATIONAL LEVELS

The Table 6.15 above demonstrated that the critical factors measures to address time lags to the generation of benefits (48.5 %), measures to address information asymmetry (49.0 %) and efficient understanding of the market structure (45.8 %), were *important* at the national levels whereas all the other critical factors were indicated as *very important*. Good governance structure in both user and provider countries (73.5 %), efficient administrative structures (55.7 %) and the assignment of intellectual property (53.6 %), all scored high.

Factor 1, a complex mixture of five of the critical factors,was interesting in that in its complexity lay in its simplicity. It denoted a major concern in the ABS debate, i.e. the generation of benefits, but the issuewas confounded by information asymmetry about the market, the genetic resource, the information itself and the time lags to benefits.

These results maintained the trend been observed throughout the study, namely thatthe focus of action and understanding till the time of writing had been on putting in place a legal and administrative framework while exposing an absence of understanding of the very the sector such a framework would need to regulate. If done well the framework would allow efficient implementation, as was discussed under the different critical factors, especially under the critical factor that dealt with social capital.

The results, therefore, seemed to imply that countries, in terms of implementation, now needed to focus on effectively dealing with the critical factors outlined under Factor 1. This would be the area in which countries would have to exert more effort if benefits were to flow as they envisaged.

The importance of critical factors at the national level could be expected to vary from country to country, since a number of factors at the national levels would affect their presence and effective implementation. Many countries would be at different stages of development and would, therefore, have different priorities dictated by national development goals and objectives. Some countries would have put in place only domestic administrative measures or policies, whereas others may have gone the full way in putting in place legal framework. It could thus be argued that these realities would affect the weight a country might give to critical factors and their indicators at the national level.

Interestingly, at the international level, all critical factors were considered as *very important*. It was only the critical factor for efficient understanding of the market structure under the *important* category.
The same trend was observed in terms of the importance of the critical factors at the national level. Good governance structure (69.5%), efficient administrative structures (55.3%) and the assignment of intellectual property (57.9%) were again ranked highest.

At the international level, countries were expected to have minimum standards as determined in this case, by the CBD and related intergovernmental organizations. The CBD set the Bonn Guidelines as the voluntary standards that countries should use in terms of dealing with ABS, and was further strengthened by the adoption of the legally binding Nagoya Protocol on Access and Benefit-Sharing. This Protocol provided a way for countries to deal with the critical factors at the international level, but its implementation would, however, differ in terms of priority and relevance in any given national situation.

It was interesting to note that efficient understanding of the market structure as an indicator scored low (37%) and that measures to address time lags to the generation of benefits (35.9%) scored the lowest.

The above underscored the overall finding of this study, specifically that more work needed to be done both at national and international level to ensure that policies and legislation being developed were truly able to allow for the market to function efficiently and that it would indeed generate benefits as desired, particularly since the status quo seemed to indicate that the contrary was the case.

6.8 INTERNAL AND EXTERNAL FACTORS THAT COULD IMPACT OR INFLUENCE THE CRITICAL FACTORS

The impact of internal and external factors on the critical factors is shown by table 16 below. Political pressure (74.2%) would have the greatest impact on the critical factors, followed by change in legal frameworks (72.2%), technological innovations (51.6%) and special circumstances at the national level (31.2%). The factors that would have a moderate impact on the critical factors would be changing demand levels, criticism from media, NGO's and the private sector industry. It was striking that criticism from government was also indicated as having a significant impact on the critical factors.

Also remarkable was that technology innovations stood amongst the three factors with significant impact on the critical factors. The other two factors, i.e. criticism from different

interest and advocacy groups, and change in legal frameworks, were linked and mutually influenced each other.

Changing demand levels and criticism from industry/private sector was perceived to have a moderate impact on the critical factors both scoring (44.7%) and (44.8%) respectively. This was again important as it pointed to the underlying question of whether the role of industry /private sector was really understood. It also addressed its importance for the success of the ABS process to achieve its main objective, namely the flow of benefits as an incentive for conservation.

Table 6.16 Internal and External Factors that May Impact on the Critical Factors

Derived factors and internal and external factors	Categories of Importance					
	SI	**MI**	**VLI**	**NI**	**DNK**	**RC**
F1: Criticism from different interests and advocacy groups and change in legal frameworks						
Change in legal frameworks	72.2 % (70)	21.6% (21)	4.1% (4)	0.0% (0)	2.1% (2)	97
Criticism from NGO	26.0% (25)	**49.0 % (47)**	17.7% (17)	5.2% (5)	3.1% (3)	96
Criticism from Media	31.3% (30)	**42.7 % (41)**	22.9% (22)	2.1% (2)	2.1% (2)	96
Criticism from government	**47.9 % (46)**	36.5% (35)	10.4% (10)	2.1% (2)	3.1% (3)	96
Criticism from private sector/industry	36.5% (35)	**44.8 % (43)**	19.8% (19)	0.0% (0)	1.0% (1)	96
F 2: Advancement in science and technology as well as special circumstances at the national level						
New scientific findings	**46.9 % (45)**	38.5% (37)	9.4% (9)	2.1% (2)	3.1% (3)	95
Technology innovations	**51.6 % (49)**	37.9% (36)	4.2% (4)	2.1% (2)	4.2% (4)	95
Special circumstances at the national level	**31.2 % (29)**	31.2% (29)	16.1% (15)	1.1% (1)	22.6 % (21)	93
F3: Political Pressure and changing demand levels						
Political pressure	**74.2 % (72)**	23.7% (23)	2.1% (2)	0.0% (0)	1.0% (1)	97
Changing demand levels	36.2% (34)	**44.7%** (42)	6.4% (6)	3.2% (3)	9.6% (9)	94

SI = Significant Impact; I = Moderate Impact ; VLI = Very Low Impact; DNK = Do Not Know; RC = Response Count

*RC indicates the number of responses received per internal/external factor

The bold figures indicate the highest response count received per internal/external factor

6.9 OVERALL DISCUSSION

The overall results confirmed that the indicators derived for the respective critical factors were valid and important. This was deduced from the fact that all the indicators were ranked either

as *very important* or *important* and that the other category received very low scoring. The results also indicated that all the critical factors were important with good governance in provider countries, the assignment of intellectual property rights and property, as well as efficient and non-complex administrative structures, seen as the most important critical factors. The demographics finding , that most countries today are both provider and users of genetic resources, highlighted the fact that the critical factor of good governance in provider countries, should be changed to good governance in both user and provider countries - as it was shown to be important for implementation of the ABS policy and legal framework.

The results further indicated that more work and understanding was needed for the role of the private sector in ABS implementation, especially regarding action in the ABS market, the valorisation of biodiversity, and the generation of benefits, as well as the time it could take to receive the benefits. This seemed to have been the missing link in the ABS policy arena in terms of implementation and the fact that there had been very few successful ABS cases.
There was clearly a need to reflect on rational and efficient implementation of ABS within an environment of partnership cooperation, dialogues and mutual understanding of the perspectives, as well as the needs and challenges facing the various actors in the ABS policy arena. This called for good governance in the area of ABS. Gandhi and Crase (2009) identified three important factors which they called rationalities and which were important for good governance in organizations/institutions. These were summarized as follows:

1. Technical Rationality, which dealt with efficiency. From this perspective good institutions achieved efficient conversion of inputs into outputs. Relevant and good/appropriate technology and productive efficiency was a critical requirement.
2. Organizational Rationality, which dealt with coordination. The division of labour and specialisation for efficiency lead to a large number of activities. The effective coordination across these activities became crucial for overall institutional performance.
3. Political rationality, which dealt with justice. Most large institutions required substantial human/people interaction and involvement. The need to address issues/perceptions of fairness and justice became very important for sustainability and performance.

In a sense, the above summarized the results on the indicators for effective implementation as well as on the importance of the critical factors. Good governance in provider countries had consistently scored high, followed by assignment of property rights and efficient administrative structures. What was being pointed out was the need for technical rationality that ensured good/appropriate technology and productive efficiency. This was very relevant for ABS implementation as was discussed under the indicators for the critical factor valorization of biodiversity.

Effective coordination or organization rationality would require partnerships, consultations and dialogues if overall institutional performance in the ABS policy arena in terms of implementation were to be achieved.

Political rationality was probably the most important factor to be considered. This was confirmed by the results of the internal and external factors impacting upon the critical factors. The decisions that were sometimes taken at the national level in terms of implementation often had nothing to do with fairness, but dealt with addressing political imperatives. These would not necessarily improve ABS implementation and could even lead to inefficiencies in implementation. Justice, or fairness requires the ability to consider and provide a platform for all stakeholders to contribute meaningfully in the interests of the collective within the ABS policy arena. The higher national development goals and priorities of revenue generation, job creation, empowerment and overall social and economic development of the country, or the collective, would need to be kept in mind however.

The results further drew attention to the importance of efficient and functional administrative structures. Dietz et al (2003) pointed out that there was a critical need for devising flexible and adaptable institutional arrangements, which were congruent with specific resource conditions when dealing with environmental resources. They maintained that such arrangements would have to address the following elements:

i) **Information:** This element refered to the need for high quality, reliable information about the state of the resources, in order to effectively regulate the resource, including providing information about stocks, flows, processes, interactions and human activities, uncertainty, and values. This aspect wasobviously very relevant to the ABS issue.

ii) **Consultation and conflict management:** Inclusive, participatory processes would be more likely to produce appropriate information, decisions, commitment, coordination, and cooperation than more authoritarian processes. The implication here was that the institutional and administrative structures being developed for ABS implementation would have to take into account the need for consultation and conflict management and that this provision would need to be enabled.

iii) **Rule compliance:** The most effective approach to ensuring rule compliance was to consistently deliver progressive sanctions that would include a variety of informal and formal mechanisms, and which would require adequate resources for monitoring and enforcement. In the ABS policy arena compliance is a critical element. Therefore, administrative structures that would be put in place would need to be such that compliance was preferred because it lowered transaction costs compared to the cost

of non-compliance. The incentives within the administrative structures would also need to be such that in the end they engendered social compliance by all ABS actors.

iv) **Infrastructure:** Appropriate physical, technological and institutional infrastructure was required to create accountability. In the case of ABS implementation these administrative structures would need to be such that they facilitated for conflict resolution.

v) **Change:** It was shown here that codified rules, which relied on current knowledge and static conditions, were less effective in coping with long-run change than more general principles that addressed objectives and consequences, and allowed for adaptation. In the ABS policy arena, since the market for bioprospecting was dynamic and constantly evolving, it would be necessary to ensure that applied administrative structures were amenable and responsive to changes. Rigid structures would not be able to deliver in terms of effective implementation of ABS.

The critical factor assignment of property rights and intellectual property rights also emerged as one of the most important critical factors. This critical factor, as was pointed out in the previous section on the discussion on indicators, would be important for legal certainty.

Young and Tvedt (2009 p. 10) argued that the commercial system was built on the ability of the user to know with certainty, the following:

i) Which resources and rights required permission or payment
ii) Which were un-owned and could thus be freely used and
iii) What processes would have to be undergone in order to acquire the resources and rights desired
iv) For each transaction, would be necessary to identify precisely the relevant legal requirements and costs as part of the process of assessing commercial risk, and in determining the value of the transaction.

It was vital, therefore, to note that in developing ABS domestic instruments legal certainty was a two edge sword. In granting access to genetic resources and/or the right to utilize them, the source country and/or provider would also require certainty. From the provider perspective, legal certainty would mean assurance that the user would comply with the legal terms of a country's chosen vehicle for ABS, performing his obligations, and that if he failed to do so, the provider or source country would have avenues of legal or informal recourse.

6.10 CONCLUSIONS

The indicators for the critical factors were confirmed, together with the importance of the critical factors themselves, both at the national and international levels. The relative importance of the indicators could be gauged by the scoring they received as well as their rankings. These must, however, be seen within the context of the discussions in this study.

The factor analysis allowed for all original indicators derived, to be retained for use as indicators for the critical factors. Actors in the ABS policy arena would now have a tool to measure their own progress and effectiveness in terms of ABS implementation, or to ensure that in the development and design of their domestic ABS policy and legal frameworks, they would have access to the indicators to continually gauge their effectiveness.

6.11 RECOMMENDATIONS

The main recommendations from this study points to a greater need for ongoing dialogue between the players in the ABS policy arena in terms of implementation and geared towards issues arising from real deals that could unlock the generation of benefits and thus ensure equitable sharing of benefits. If the ABS private sector was not allowed to engage meaningfully in the ABS implementation process, this would be difficult. The indicators developed provide a check list to governments as to what elements they should consider within their ABS domestic frameworks that would assure a measure of success. It is, therefore, recommended that those involved in the ABS policy arena use these indicators so that they could be further tested and refined in the interest of effective ABS implementation.

There will be a critical need for working actively towards building social capital amongst the various actors in the ABS policy arena as well as building real political will and commitment. This would not only have to come from the high level decision makers, but also from the technocrats and bureaucrats.

Finally, given the importance of access to technology and technology transfer, the need for the development of an international instrument on technology transfer was highlighted.

CHAPTER 7

INSTITUTIONAL LEARNING: THE CASE OF THE ABS NEGOTIATIONS

WITHIN THE CBD LESSONS TOWARDS EFFECTIVE IMPLEMENTATION OF THE NAGOYA PROTOCOL ON ABS AND DOMESTIC ABS INSTRUMENTS

If you always do what you always did, you will always get what you always got.
~Henry Ford

7.1 INTRODUCTION AND BACKGROUND

The prolific negotiation agenda, immediately following the United Nations Conference on Environment and Development UNCED in 1992, Rio De Janeiro, Brazil, has produced a complex array of agreements and instruments, resulting in an impressive amount of environmental governance and regulation. Intense negotiations, however, have come at a price (Munoz et al 2009 p. 1). They have spread thin the limited financial and human resources devoted by nations to Global Environmental Governance and created a mess of seemingly unmanageable institutions (Biermann 2000, p. 22; and Esty and Ivanova 2002, p. 5. cited in Munoz et al., 2009). The negotiation burden has been particular heavy for developing countries, which often have the fewest resources and weakest capacity. This has led to what some have described as a sense of negotiation fatigue because of an expanded and unwieldy negotiation load (Chasek 2005, p. 74; von Moltke 2005, p. 175; and Najam *et al*. 2006 cited by Munoz et al., 2009).

The proliferation of environmental negotiations has seemed to take on a life of its own and created a nearly “permanent” global environmental negotiation enterprise where negotiations itself seem to have become the goal, sometimes to the detriment of actual treaty implementation (Munoz *et al,* 2009). This in turn, leaves the negotiators immensely tired, but

with little sense of real achievement. Many environmental negotiators have expressed concern about “negotiation fatigue” which has resulted from the heavy negotiation burden. (Munoz et al, 2009). Negotiation fatigue can be particularly heavy on developing and small countries, whose limited resources are particularly stretched by the growing negotiation burden (Munoz et al, 2009 p. 4). In the ABS negotiations this was true. Especially as the time pressure mounted towards Nagoya and when the negotiators started counting the days to the end signaling close of negotiations.

This proliferation of environmental treaties have further brought with it the issue of institutional interplay due to the rising density of institutions at the international level. All of this calls for greater attention to interaction and interplay,given that institutions have a definite spatial remit (in terms of issue, jurisdiction and membership) that brings with it the so-called “boundary problems” central to institutional interplay (Moss 2004 p. 2 cited by Chambers et al 2008). The boundaries that are at stake according to Chambers *et al* (2009) relate to political responsibilities and social spheres of influence.

Institutions are not self-contained entities and so the effectiveness of specific institutions in terms of implementation depends not only on their own features but also on their interactions with other institutions. In the case of the Nagoya protocol the various international organizations enumerated in the preceding paragraph will impact on its effective implementation. Chambers *et al* (2008) outline that the question of how parties to international negotiations and concluded agreements, in this case the Nagoya Protocol on ABS, should deal with the situation of interplay. The question, therefore, that comes to mind is what implications does this interaction hold for the interests of the stakeholders, particularly with regard to the formation, operation and implementation of the specific institution, for its performance, and effectiveness, and for the overall global governance context? It is further necessary to look at the political and policy efforts to strengthen overall governance with a view to identify and stimulate interlinkages among institutions (legal, normative, operational and functional) in order to reduce institutional conflict and resource-draining duplication (Chambers *et al* (2008). Put differently, in what ways can issues and processes across institutions be strategically linked and arranged to re-enforce each other? These questions and the issue of interplay was considered through looking at the biosafety protocol under the CBD after its conclusion. These questions are relevant to the issue of the effective implementation of the Nagoya Protocol.
The ABS Nagoya Protocol has interface with a number of other international organizations such as the International Treaty on Plant Genetic Resources for Food and Agriculture; the FAO Commission on Genetic Resources for Food and Agriculture; he United Nations Convention on the Law of the Sea; the Antarctic Treaty; International Regimes pertaining to Pathogens;

and, International Regimes Pertaining to Traditional Knowledge of Indigenous and Local Communities and with international regimes on Intellectual Property. When ABS emerged as an issue in the negotiations of the CBD in the late 1980's, it was largely in reaction to the development of intellectual property regimes that could deprive developing countries of rights over their resources. That issue is still not resolved.

The questions above lead to consideration of what to do with regard to the implementation of the Nagoya Protocol on ABS, and whether the negotiation process provides us with lessons from which the CBD and entire Multi-lateral system can learn in order to enhance effective implementation of the Nagoya Protocol on ABS. This would constitute organizational or institutional learning.

This chapter focuses on an analysis of the ABS policy arena in terms of whether there has been institutional learning within ABS policy setting processes. The intention was to see whether institutional learning has taken place that could provide meaningful feedback for adaptive management at the national level. Since institutional learning is also relevant at the international level in terms of the implementation of the Nagoya Protocol, a section is devoted to looking at institutional learning within the CBD - notably the ABS working group - and whether it necessitated the conclusion and successful adoption of the Nagoya Protocol on ABS. This understanding was essential since the finalization of the negotiations of the Protocol in 2010, have heralded in the implementation phase of the Protocol by the Parties to the CBD. The implementation itself would require ongoing engagement at the international level to address issues and actions necessary for implementation. This reflection aims to guide that process.

7.2 OVERVIEW OF THE ISSUES AROUND ORGANIZATIONAL LEARNING BASED ON THE LITERATURE REVIEW

It is important to adhere to the longstanding argument in the design tradition of policy making that proposes that policies be treated as experiments, with the aim of promoting continual learning and adaptation in response to experience over time (Dewey, 1927). This prescriptive argument is the foundation of adaptive management strategies, which consist of policy experiments designed to detect (and correct) errors in a reliable, efficient manner (Lee, 1993). These arguments suggest designing institutional arrangements to promote learning and adaptation in policy practice (Ostrom, 1999; Schneider and Ingram, 1997; May, 1992). Such policy design becomes even more important within the implementation phase and is very relevant for ABS measures. Busenberg (2001) has argued that these concepts lead to a range of questions on learning processes and policy change. He has raised the following questions:

What forms of learning arrangements (and learning constraints) can be identified in different policy domains? What observable impacts do these institutional arrangements have on policy change over time? In what way do these impacts of learning arrangements (and focusing events) vary according to the characteristics of the policy domains in which they occur? How does the learning differ in policy domains marked by conflicting values? In response to these questions, Busenberg (2001) has maintained that answering these questions would require comparative studies across a broad array of jurisdictions and policy domains.

These questions and the key concepts of learning and adaptation within the design of policy making were seen to be highly relevant to the ABS policy arena. The focus within this chapter is to demonstrate how the ABS policy design could be translated into effective implementation strategies and whether the institutional and organizational learning from the design phase points to lessons that could be helpful in the ABS policy implementation phase.

7.2.1 The Institutional Environment and Institutional Arrangements and their Relevance to Institutional Learning

The overall theoretical and analytical framework of this thesis is New Institutional Economics (NIE). NIE tries to provide an economics theory about institutions. It is thus a complement to traditional neo-classical micro-economics. Chapter 3 provided an overview of NIE theory. In this chapter only those key concepts relevant to institutional or organizational learning will be provided. Challen (2000 p. 13) has clarified that within the context of institutional economics the term institutions is not used to refer to organizations or groups of people such as financial institutions, business corporations, churches, family units or governmental agencies. Rather it is used to denote the humanly devised rules of behavior that shape human interaction (North, 1990 p. 3). The purpose of institutions is to provide a set of rules for cooperation and competition and thereby, adjust conflicting claims of different individuals and groups for scarce resources. These organizations are, however usually founded on and operate according to formal or informal rules of behavior. Such rules however, do fall within the definition of institutions as the term is most commonly used in economics (Challen 2000 p. 13).

Challen (2000 p. 13) points out that some characteristics of institutions based on literature are that they:

- Are socially organized and supported
- Include formal and informal rules as well as informal conventions and codes of behavior
- Are slow-changing relative to the activities that they guide and constrain
- Prescribe prohibitions as well as conditional permissions.

Institutions from Challen's (2000 p. 15) perspective then, form the basis for a relationships between individuals within a society, with formal or informal institutions existing to govern almost all situations and interactions.

These observations were seen to be relevant to the ABS negotiation and implementation issue. It was important to look at what rules structured the interactions of the negotiations of the ABS Protocol politically, economically, and socially. The questions arose as follows; What rules delineated the game within which the institutional arrangements (governance structures) of the ABS negotiating process were organised? How did that process actually operate, what where the prescribed rules of conduct within which the negotiating process took place?

NIE according to North (1990) looked at types and levels of institutions which were the Institutional Environment (IE) and the Institutional Arrangements (IA) also known as the governance arrangements.

Slangen and Heringa (2009) and North (1990) described the nature of the IE and IA. The IE is the man-made constraints that structure political, economic, and social interactions. It delineates the rules of the game within which the institutional arrangements (governance structures) actually operate, and also prescribes the rules of conduct within which human actions take place (Slangen and Heringa, 2009).

The IA consists of the basic formal laws and rules of society, the way these are enforced, and monitored, and sanctions and conflict-resolving mechanisms are applied) and informal rules (consist of sanctions, taboos, customs, traditions, norms, values and beliefs and common codes of behavior) in a society (Slangen and Heringa ,2009). The differentiating point between these two types of institutions is that the rules mainly define the environment of the governance structure. A governance structure is a way of implementing and operationalizing the "rules of the game" (North, 1990).

Social capital (shared knowledge, understandings, norms, rules, and expectations about patterns of interactions that groups of individuals bring to a recurrent activity e.g. multilateral negotiations) also belongs to the institutional environment. Trust is perhaps the most important component of social capital. A small amount of social capital in society will lead to higher transactions costs (Slangen and Heringa, 2009). The institutional environment differs between countries and even within countries the basic rules are not always the same. The rules are not always bound to borders and, therefore, some parts of IE are more dynamic and change rather quickly, while other parts change more slowly.

The issue of property rights which bears prominence in the ABS policy arena belongs to the IE. Property rights determine who has the power to control transactions within an institutional arrangement and consequently who has the right over the residual income from those transactions. Institutional arrangements or governance structures comprise the whole spectrum of co-ordination mechanisms, with markets as one polar case situated at the one end, and centralized organizations as another situated at the other end of the spectrum.

Having considered definitions of the IE and IA a consideration of the characteristics of institutions as laid out by Challen (2000 p. 13) were also relevant and visible in the ABS negotiating process and would influence ABS implementation at all levels.

Challen (2000 p. 15) characterizes property rights in terms of the legal relations established by institutions, based on literature as follows (Hallowell, 1943, cited by Bromley, 1989 pp. 202 - 3):

- The nature and kinds of rights that are exercised, and their correlative duties and obligations
- The individuals or groups in whom these rights and duties are vested, and those who play the correlative roles
- The objects of social value to which the property relations pertain.

Thus, a property right provides an entitlement to behave in a manner that may impose costs on another party (Challen, 2000 p. 16). The ABS negotiating process was governed by established UN rules and codes of conduct, and relations that guided parties as to their rights and responsibilities. As discussed by Challen (2000), these rules sometimes served as a limitation and adaptation to the current context, which although difficult, were sometimes required. They were also evident in the ABS negotiating process, For example, during negotiations by blocs for their rights, only parties could introduce text, and they had the first

right to be heard as opposed to the rights of indigenous and local communities, research and academia or the private sector. This had a significant influence on all these stakeholders, especially in terms of the implementations of the negotiated provisions of the Protocol since these provisions may have unintended consequences on the interest, rights and responsibilities of these actors.

7.2.2 How Does Institutional Change Occur?

The above section related to the institutional environment and the institutional arrangements. The questions that arose were whether these could be changed should situations arise that required adaptive responses.

North (1990 p. 6) maintains that institutional change is a complicated process because the changes at the margin can be a consequence of changes in rules, in informal constraints, and in kinds and effectiveness of enforcement. Institutional change is complicated by the diverse forms of rules and behavioral norms that institutions comprise (Challen 2000 p. 47). Scott (1989a) cited in Challen (2000 p. 47), proposes four means by which institutional change has occurred historically:

- Spontaneous and discontinuous change by revolutions and conquest
- Spontaneous and incremental change from the working of custom and common usage'
- Incremental change by judicial processes and evolution of common law
- Incremental change created by imperial, bureaucratic or political means.

Challen (2000 p. 47) argues that the last three ways of effecting institutional change are entrenched in modern democratic cultures. The most accepted model for institutional change is focused on the role of institutions in determining the magnitudes of transaction costs and external costs and benefits accruing to, and arising from, economic exchange (Challen, 2000 p. 47). Institutional change occurs through a political system (Challen 2000 p. 50). Thus, a private entrepreneur investing in institutional change could do so, thereby attempting to influence the behavior of the political entrepreneurs in the relevant polity. Such influence is exerted by either influencing the political agent directly or indirectly through lobbying (Challen, 2000 p. 50). In the ABS policy arena this means that stakeholders from academia and research, indigenous and local communities, and the private sector, must by necessity, influence the parties should they want their views and concerns to be reflected in the final negotiated output. Even this can be problematic and challenging depending on how these views and concerns are viewed by parties who may have opposing views and concerns.

The whole idea of this attempt to influence the political agent is to reduce transaction costs, or other costs for the private agent[15] especially during the perceived implementation phase. The influence is however, impacted upon by perceived costs and benefits of the political action, the existing institutions, the political tastes and believes of the political agent and the state of social technology (Challen, 2000 p. 50). The existing institutions will affect the perceived costs and benefits of political action defining political processes and determining the costs of designing institutional structures and the costs of implementing those structures via a collective policy. Political taste and benefits comprise economic and social ideologies whereas social technology comprises such factors as institutional precedents, and states of political and social knowledge (Challen 2000, p. 50).

The implication of these issues were considered during the negotiating process for the ABS protocol.Numerous calls were made by certain stakeholders to consider the possibilities and implications of the practical implementation of some of the provisions. This was because many of the issues being negotiated for inclusion in the text of the protocol were new, thus creating legal precedents e.g. the issue of check points, and compliance measures. Lee (1998 p. 81) argued that most multilateral environmental treaties imposed symmetric obligations on all signatory nations – that is, they require all signatories to do the same thing. That "same thing" may take several forms. It may involve the establishment of common administrative procedures to regulate some activity. However, in most cases, when a nation becomes a signatory to a treaty its interests are highly asymmetric regarding the environmental issue being negotiated – depending on how strongly a state would seek to improve it and on how much it would cost to make any particular level of contribution to the effort. While treaties with simple, symmetric obligations offer important negotiating advantages, symmetric deals among asymmetric parties can create serious institutional inefficiencies and inequities. (Lee, 1998 p. 81).

Depending on the above, the political agent will undertake investment in institutional change through the relevant processes of the policy or political collective (Challen 2000, p. 50). There is thus a need for a political process that will result in changes to the institutional framework and to the economic environment of the private agent. From this perspective, institutional change consists of many transactions between economic and political agents with associated

[15] In the case of ABS the private agent can be considered the private sector, academia or research institutions. The perceived costs and benefits of political action may override the desire for actions that truly reduce transaction costs and assure efficiency due to political imperatives, and that may perhaps be imbedded in the governance arrangements of the institution.

transaction costs (Challen 2000, p. 50). The above all bear relevance to the ABS policy and implementation arena.

7.2.3 Issues Facing Empirical Research on Organizational Learning Process

Busenberg (2001) built a conceptual framework to guide focused empirical research on learning processes and policy change over time. His framework synthesizes relevant concepts from studies of learning in public policy and organizational learning. He maintains that the policy literature suggests the presence of a set of variables that constrain the impact of learning processes and policy change. For a given policy domain, these variables include (1) the characteristics of the issue in question, (2) the distribution of political authority and influence in the domain, (3) the natural, economic, and technical resources available to support policy actions, (4) the institutional structures of the governments active in the domain, and (5) the value structures of the cultures active in the domain (Sabatier and Jenkins-Smith, 1999; Rose, 1993; Kingdon, 1995 cited in Busenberg, 2001 p. 177).

Bussenberg (2001 p. 177) further argues that these contextual variables set boundaries on the process of learning and policy change, because they inhibit certain courses of action. He explains that learning arrangements can generate policy proposals that are unfeasible because they are too costly, technically impractical, incompatible with social value structures, or inconsistent with institutional procedures (Kingdon, 1995 cited in Busenberg 2001, p 177). Learning may be inhibited in domains where the impact of policy change cannot be readily measured, as well as in domains that involve fundamental conflicts of values between different actors (Sabatier and Jenkins-Smith, 1999). It is shown that in some cases, public and political satisfaction with a given policy program may, in fact, weaken social support for further learning and improvement (Rose, 1993). In sum, the policy impact of institutional arrangements and political events are shaped by the context in which they occur. Furthermore, that context may shift over time. For example, a shift from one governing coalition to another could create new support for value choices (and policy proposals) that had received less support in the past (Rose, 1993).

These issues are relevant to the case of the ABS implementation process. Especially variables (3) (the natural, economic, and technical resources available to support policy actions) and (4) the institutional structures of the governments active in the domain (Busenberg (2001 p. 177). The challenge is how to look for learning that makes the generation of policy proposals feasible for practical ABS implementation on the ground, based on the provisions of the Nagoya Protocol. There is thus a need to ensure that in terms of implementation these policy proposals are not too costly, not technically impractical, not incompatible with social value structures or

inconsistent with institutional procedures (Kingdon, 1995 cited in Busenberg 2001 p. 177). Given the lack of effective implementation of many ABS frameworks around the world, it seems that there is a real need for care to be taken during the implementation of the Nagoya Protocol on ABS, especially in relation to the development and design of domestic ABS measures.

Another consideration is that variable 4 means in the case of ABS that the available resources that are there from the mother organization[16], the subscribing governments and other stakeholders will have an impact on the implementation of the Nagoya protocol and therefore institutional change that may have serious obligatory implications on resource availability from some of the key stakeholders from especially the public sector both industrialized and non-industrialized may be opposed or supported depending on the politically perceived costs and benefits.

It is also important to point out the issue that in some cases and in some countries public and political satisfaction with a given ABS policy program based on the Nagoya Protocol, may weaken social support for further learning and improvement that would push boundaries further through innovation. Busenberg (2001 p. 177) further points out that to consider policy learning, the context within which that policy is being set, is also important since the policy impacts of institutional arrangements and political events are shaped by the context in which they occur, as well as the ability of the context to change and to adapt to changeover time. This means that within the context of implementation, there may be an opportunity to consider the design of policy options based upon limitations of current rules of the game as set by the Protocol, whilst simultaneously creating new value choices that may not have been considered previously. For such change to occur, consideration would need to be given to what is necessary for effective ABS implementation and who could meaningfully assist in this implementation.

From the above it is clear that the issue of institutional learning can be approached from various perspectives. The perspective taken in this paper was that of Siebenhüner (2005 p. 508) who understood institutional learning as a process in which individuals or collective actors acquired knowledge that led to a change in their behavior and resulted in modified institutional arrangements. Actors in this sense are the citizen groups, interests groups, business corporations, governments or actor networks (Mitchel et al., in press, Christiansen and Tagen, 2002 cited in Siebenhüner, 2005 p. 511).

[16] In this case the CBD

7.2.4 Institutional Learning as Change in the Behavior of Individual Resulting in Changed Institutional Arrangements

From this perspective, Siebenhüner (2005 p. 511) argues that institutional learning begins with the assumption that actors act in an uncertain environment and on the basis of incomplete information. During policy processes such as negotiations, consultations, bargaining, or within assessments processes, actors develop new knowledge and acquire existing knowledge from others.

Based on literature with regard to organizational learning, the following factors have been identified in empirical studies and theoretical considerations to be influential in learning processes (Siebenhüner, 2005 p 511):

- Intense, open and transparent communication structures for information diffusion
- Existence of effective learning mechanisms such as regular evaluations, specific committees, workshops etc.
- Commonly shared values and norms in relation to the solution of actual problems
- Conflict over resources, values and identities which foster the demand for change and might spark off learning processes.

Siebenhüner (2005 p. 511) maintains that learning processes in organizations are triggered by external factors rather than by internal ones. He determines these factors to be political pressures, changing demand structures, new competitors, new scientific findings, technological innovations, criticism from NGOs, others parts of industry or from media. He proceeds with analyses of the implementation of the CBD's access and benefit-sharing provisions from an institutional learning perspective. Access legislation has been enforced, either as a rather general environment, as sustainable development framework laws which regulate bioprospecting and export activities, as specific new laws or modifications, or as existing legislation. Most of them spell out the principles of prior informed consent and mutually agreed terms (Glowka, 1998). Siebenhüner (2005 p. 513), for the purposes of his study on institutional learning within the CBD, defines institutional learning as a process where individual or collective actors acquire knowledge and advance practically through the process of achieving agreement on the international regulation, on the access to genetic resources and on the sharing of the benefits arising from their utilization.

Siebenhüner (2005 p. 513) divided the learning phases from 1992 -1998.

During this phase, countries who served as importers of genetic resources started to involve business and industry as well as the scientific community in the debate through dialogues and other means of sharing information. Their response towards the suggestions of regulation of bioprospecting through standardized measures was apprehensive. However, the WSSD paved the way towards the negotiation of an internationally binding instrument or regime.

Siebenhüner (2005 p. 515) points out that the CBD is an international agreement between governments, but it addresses issues that bear great relevance for other sectors such as NGOs, business and industry, science, as well as indigenous and local communities. In the international policy arena and the debate on the ABS provisions, a number of coalitions between these actors emerged that were grouped around certain common commercial or development interests. The different layers of interests made the commonly used classification of North-South conflict problematic.

A new set of classifications emerged during the processand are described below, based on Siebenhüner (2005 pp. 516 – 517):

Strong User Interests

The coalition of those representing user interests i.e. mainly industrialised countries as well as user firms, has reservations with regard to internationally binding ABS regulations and strives to enable bioprospecting research activities in biodiversity rich countries with as few administrative restrictions as possible (Nijar and Fern, 2012), Ling (2010) and Rosendal (2006).

Process Facilitators

These stakeholders have the interests of balancing industry interests and development goals on the basis of an international regulation that sets clear standards and rules and, thereby, enables scientific research through eliminating uncertainties. They are facilitated through financing organized meetings, drawing up drafts of guidelines and promoting negotiations foran international regime. This can be seen as the so-called developed countries, with a few emerging in the true facilitator role e.g. Norway, Switzerland and the EU. The countries that came to formpart of the ABS Capacity Development Initiative[17] also fall in this category.

Provider Interests

[17] This Initiative started as the Africa ABS Capacity Development initiative funded by Germany and the Netherlands and later also by Denmark. It is now called the ABS Capacity Development Initiative since other regions also wanted to be capacitated and reference to Africa was dropped.

This group of countries demanded a more progressive strategy for the implementation of the ABS provisions of the CBD. Their interests include building up national regulatory and administrative capacities to deal with the use of genetic resources and to facilitate project funding as well as stakeholder participation. It can be argued that many of the Asian and Latin American countries fall in this category

Africa and the Caribbean Countries

Lacking the necessary technological capacity, these countries, although also serving as provider countries, focus on poverty alleviation and prevention of biopiracy. According to Siebenhüner (2005) they view all bioprospecting dangerous as they have no resources to challenge biopirates and patents and to enforce ABS agreements. It is their desire to establish a regime which will protect their interests in foreign countries and which will help respond to their poverty issues. Essentially this group together with the provider interests group, all were asking for a legally binding instrument with a strong compliance regime.

Indigenous and Local Communities (ILC) and Advocacy Groups

ILC and advocacy groups also brought issues of provider interests to the fore. It can be argued that it was perceived by some observers that for some advocacy groups it was not benefits-sharing but anti-globalisation, against multi-national corporations advancing through bioprospecting due to the link to biotechnology (Ling 2012). This link also brings to the fore sentiments that emanated from the biosafety negotiations[18]. They sought to enhance their power against the international trade (multi-lateral trade) system and thus this may have led to a perception of a tripartite system i.e. power vs trade vs globalisation.

The analysis of the above stakeholders by Siebenhüner (2005 p. 517) was done based on the following key elements:

- Communication structures for information diffusion
- Effective learning mechanisms
- Commonly shared values and norms in relation to the solution of actual problems
- Conflict over resources, values and identities which foster the demand for change and might spark off learning processes.

[18] At the onset of the ABS dialogue, negotiations for the Cartagena Protocol on Biosafety were at their height.Many groups were anti-biotechnology and genetic engineering and, since ABS also used biotechnology. some of the advocators against biotechnology also came into the ABS dialogue with the same sentiments they had harbored under the Cartagena Protocol on Biosafety negotiations.

Siebenhüner (2005 p. 519) concluded that there was indeed institutional learning in the CBD that can be attributed to a number of influencing factors:

- The existence of actor coalitions with balanced and strong facilitation interests
- The establishment of reflexive mechanisms that gather and assess the existing knowledge and prepare new decisions
- A functioning communication and process facilitation infrastructure
- Predominantly productive conflicts; and
- International negotiation dynamics that pressurized the processes in the policy arena.

Siebenhüner (2005) looked at the issue of institutional learning in the CBD until 1998 with the conclusion of the Biosafety protocol. The following section looks at the phase 1998 – 2010 to see whether this institutional learning has continued within the CBD as an institution and its institutional arrangements following the same perspectives used by Siebenhüner (2005). This will be viewed however from the perspective of the ABS Nagoya Protocol negotiation process. The classification of the different stakeholders, as done by Siebenhüner (2005), remains relevant.

7.2.5 Communication Structures in the ABS Policy Arena

Siebenhüner (2005 p. 517) has argued that according to the organizational learning literature the flow of knowledge between the actors involved is an indispensable ingredient of collective learning processes. Therefore, open and transparent communication structures are key for the diffusion of knowledge and, by the same token, for the promotion of trust amongst different actors.

This has been the significant learning curve in the Nagoya Protocol negotiations of the Nagoya. Hours were spent in devising mechanisms to allow for meaningful, insightful, open, frank and transparent communication structures to help the actors come to the same understanding about the key issues and to address the information asymmetries that had kept them apart. These communication structures helped the various actors to elaborate on their understandings about governance structures that they saw as relevant and appropriate for a functional ABS regime. It helped to foster an understanding of the ABS market to some extent. The role of technology transfer and the value of biodiversity valuation was perhaps not fully explored. This must, however, be seen against the background of the interest of the main actors as discussed by Siebenhüner (2005). The issue of benefit-sharing remained key to the discussions and was facilitated by communication. However, time lags to benefits may not have been communicated to the extent required, given the interests of some of the key actors.

Siebenhüner (2005 p. 517) further pointed to the general distrust that existed between groups from industry and indigenous and local groups from biodiversity-rich countries. Moreover, in looking back at the negotiations and to the end of the negotiations, it appeared that the real distrust may have been between the provider countries and the industry groups. Indeed the ABS processes had, in terms of communication processes, been inclusive towards non-governmental organizations and indigenous groups (Siebenhüner, 2005 p. 517). The voice of industry was, however, silent amongst the actors from provider countries and was assumed to be heard through the user or recipient countries.

It should be pointed out that although there was still a prevalence of general distrust in terms of government-to-government communication in some regards, Siebenhüner (2005 p. 517) pointed out that this did not fundamentally hamper the progress of the implementation process i.e. the effective negotiation and conclusion of the negotiation for the regulation of genetic resources.

The transparent, open, honest and insightful communication structures facilitated the development of a significant body of social capital amongst the actors (Siebenhüner, 2005 p. 517). This then contributed to an increase in shared knowledge, understandings, norms, rules, and expectations about patterns of interactions that the actors brought to the recurrent activity, namely the negotiation process. It should be pointed out that the ongoing international negotiations were also shown to belong to the institutional environment as defined by NIE theory (North, 1990).

Sources of trust are related to the institutional environment and to institutional arrangements (Slangen, 2003 slide 26). Trust, being perhaps the most important component of social capital. a small amount of social capital within a group, organization or society would lead to higher transaction costs (Slangen, 2003 slide 25).

In the case of the ABS negotiations as trust increased amongst the actors so the transactions cost decreased, and issues could be concluded more easily. The high levels of trust generally led to better cooperation, co-ordination and motivation which in turn brought about easier transactions (North, 1990), Slangen 2003).

Trust plays an important role outside, but also between and within the organization, in that it lowers the cost of search and monitoring, and reduces the cost of contracting and control. These are important elements in the ABS implementation process.

According to Slangen (2003, slide 26) there are 3 different notions of trust which are: trust in people (behavioral trust), trust in the institutional environment (confidence), trust in organizations (and government). All these notions were important in the Nagoya Protocol negotiation process and will continue to be important in the implementation stage. Parties and other stakeholders thus need to continue to find ways to increase social capital, especially trust amongst themselves.

7.2.6 Reflexive Mechanisms

In the organizational learning literature, reflexive mechanisms are seen as crucial platforms for the exchange of knowledge, the fertilization of past experiences i.e. the continued use of best practice based on past experiences and, thorough reflection on new perspectives on the problems at hand, and on possible solutions and the current situations (Poper and Lipshitz, 1995, Siebenhüner (2002a). Siebenhüner (2005 p. 517) maintains that typical examples are regular evaluations, specific committees, or topic-centered workshops.

In this area of reflexive mechanisms most significant learning occurred (Siebenhüner 2005, p. 517). The process saw the emergence of good will and understanding towards innovative and out-of-the-box thinking. A new group of facilitators emerged out from the set institutional environment during the ABS negotiations. These were individuals from the collective[19] who were able to design, generate the necessary consensus and implement innovative strategies towards consensus building through intense exploration of the core challenging issues. It appears that in the ABS negotiations for the Nagoya Protocol the issue of reflexive mechanisms also provided the most significant learning. This issue was explored in more detail as regards the ABS negotiating process in section 7.7.5 of this chapter.

7.2.7 Values, Norms and Conflicts

As the organizational learning literature suggests, commonly shared sets of values and norms committed to creativity, flexibility, and the solution of actual problems help learning processes to come about and to materialize in concrete actions. Siebenhüner (2005 p. 518) points out that certain sorts of conflicts among different values and identities have been found as instigative for learning processes. Siebenhüner (2005 p. 518) further maintains that in the ABS policy arena one can observe conflicts among highly diverse interests and fundamental values that by and large, are shared by the coalitions described above. These are:

[19] The collective refers to all the different negotiating stakeholders put together and these individuals came from this pool.

- A strong focus on fulfilling human needs through the development of commercial products rather than the preservation of genetic resources
- The development of a functional voluntary regime with due attention to the preservation of natural habitats and environmental conservation
- Equity issues on a global scale (Siebenhüner, 2005 p. 518)

Conflicts with regard to values do not necessarily hamper learning processes but require the agents to get to know each other's values and basic interests in order to reflect upon their own values and then promote solutions formed around compromises between these differences (Siebenhüner (2005 p. 518).

Such conflicts essentially continued to prevail throughout the negotiation process. Some of the players, however, made significant learning progress in terms of the values that they represented and the process allowed them to clarify their core values and interests. This happened in a number of innovative ways, emissaries being sent, an exploration of the key values through friends of the chairs, and through contact groups. These processes minimized the perceived barriers that kept the groups apart.

7.3 EXTERNAL INFLUENCES

Siebenhüner (2005, p. 519)) maintains that progress in ABS has been influenced by factors that originated from outside of the arena outlined above. External influences that were identified by Siebenhüner (2005, p. 519) as some of the key drivers for change were present throughout the process till the adoption of the Protocol. The pressure on the international environmental governance organizations to produce some success stories remained. Copenhagen[20] in the climate change policy arena was a failure. The dry land issues were not placed at the forefront at all, since the Strategy was put in place ahead of time and biodiversity focused essentially on two main issues i.e. the Cartagena Protocol and the Nagoya Protocol. There were, of course, also some other external factors such as the fact that the final negotiations took place in Japan. It was for some of the stakeholders essential that the deal be concluded in Nagoya as failure may have resulted in no Protocol deal at all in the future. Siebenhüner (2005) concluded that institutional learning could provide a way to solve fundamental policy problems.

[20] Reference to the Copenhagen 2009 Climate Change Conference under the United Nations Framework Convention on Climate Change which took place in Denmark.

The findings from the global survey (reported in chapter 5) on the effectiveness of ABS implementation showed that criticism from different interests and advocacy groups would have a moderate impact on ABS implementation. Significantly however, criticism from government would have a significant impact compared to the perceived moderate impact from NGO's, media and the private sector. Governments would, in the end, be the ultimate decision-makers in the ABS policy arena and in the implementation of the Nagoya Protocol. It is interesting to note though that the findings (as reported in chapter 5) rated as very high impact implementation to change in the legal framework. This indicates that in the end, the changes in the legal framework, if facilitating ABS transaction and minimizing transaction costs, may foster successful implementation as if they were increasing transaction costs and inhibiting ABS transactions, thus hindering implementation. It could be argued that the innovation employed during the negotiation process was also an attempt to change the legal framework within which the negotiations were taking place. Moreover, as was discussed, these realities had, in the end, a facilitator effect on the negotiations - addressing information asymmetries and fostering consensus and understanding of the key issues that emerged during the process.

Advancement in science and technology, as well as special circumstances at the national level, was indicated by the findings of the global survey for effectiveness, as having a significant impact on implementation. It could be argued that they also contributed to learning within the negotiations, especially in understanding the concepts of utilization of genetic resources and the definition of genetic resources – both of which facilitated a significant momentum towards the adoption of the Protocol.

Finally, political pressure and changing demand levels were also considered important for implementation. However, the impact of political pressure was more significant,whereas changing demand levels were perceived as having a moderate impact. It could be argued that political pressure contributed significantly to the adoption of the Protocol and would thus also be important for its implementation. Changing demand level,a market driven factor, and can to some extent be argued that as contributing to the successful conclusion of the negotiations. This is because, throughout the negotiation the market for ABS prevailed, thus making a case for the need to regulate the ABS transactions.

7.4 DISCUSSION

This chapter considered institutional learning within the ABS negotiating process. During the process there were inherent limitations within the negotiating frame that were not amenable to consensus and institutional learning. The first among these were the archaic rules and

procedures that governed the negotiation process as determined by the United Nations. These rules were very rigid and were protected from too much change for political imperatives. It would be important to retrace this learning to the mother body i.e. the Convention itself - since this learning essentially took place within a subsidiary body of the Convention. The learning in itself would not be useful if the Convention did not take note of it. Herein lay the difficulty, since the Convention itself was part of the larger UN governance structures and property rights. It could be argued that such governance structures and property rights may have triggered the need to find new communication structures and reflexive mechanisms. While many have attempted to change the UN itself, that was not the focus of this study - although such a prospect could be interesting to consider in terms of its relevance to reducing transaction costs in the implementation of ABS regime in accordance to the Nagoya Protocol.

In the ABS case, the use of the consensus rule for decision making also had implications for effective implementation. Narlikar (2006), writing about fairness in international trade negotiations, maintains that the actual norm of the UN in terms of decision-making is based, not on majority voting, but on consensus. He points to the difficulties that this may present for some actors. For a decision to be passed, no member present at the meeting at which the decision is taken, formally objects to the proposed decision. To achieve this situation the following is assumed (Narliker 2006, p 1014):

- Presence in the meeting
- Open show of hands rather than a secret ballot
- Facilitated consensus-building through a process which involves many green room meetings, contact group meetings or buzz groups, which often meet on invitation of the Director General (the chair in the ABS case) of that meeting and may result in the exclusion of some critical actors from the key discussion and negotiation stages.

In the context of the CBD and the negotiations of the ABS Protocol, these three challenges also emerged. Since the ABS Protocol was an intergovernmental process set to pave a way for international governance and regulation of ABS, it could be assumed that the decision-makers would be governments of both provider and user states. However, the activity to be governed was complex and required interaction of those who engaged with it. Industry and indigenous and local communities were sometimes not allowed into the meetings at which consensus was being fostered, and had to rely on lobbying to have their voices and concerns reflected in the final consensus outcome. The criteria above thus were not entirely met. It could still take a while before governments would be able to fully break down barriers that may act as blocks to effective consensus decision-making, and that would allow for effective

implementation of the measures needed for international environmental concerns such as the issue being addressed by the ABS Protocol.

In this regard it could be argued that institutional or organizational learning did not take place across the board. The crucial aspect of this challenge would liewithin the UN framework for negotiation.

Narlikar (2006 p. 1014) argues that in the case of trade negotiations, many developing countries feared that open dissent to a motion that a developed country was supporting would result in retaliatory consequences and penalties against them outside the meeting room. Hence, many chose to remain silent. Silence, however, was also interpreted as consensus. This action did not, therefore, provide them with the desired outcome.

Narlikar (2006 p. 1015) further argues that there is room for developing countries to collectively override the norm of consensus decision-making and insisted on majority voting as per the GATT rule-book. However, besides the obvious problems of collective action in employing such a strategy, this strategy would have entailed the risk that developed countries might withdraw their commitment to the GATT and turn to alternative bilateral and regional arrangements. The costs of such arrangements and the decline of the multilateral trading system would have been the highest for developing countries. These would include susceptibility to greater bilateral arm-twisting, but also the losses that would result from the end of the free-ride that they had enjoyed on tariff reductions by developed countries.

Fortunately, this may not entirely have played out in the ABS arena, as was shown through the institutional learning studied here. This study has made the point that essentially the system was able to learn and improve collective decision making - especially in implementation of multilateral agreements such as the Protocol. The call was, therefore, to allow for industry and other stakeholders that had been in the shadows previously, but who play(ed) a critical role in the ABS value chain, to be involved in the implementation of the Nagoya Protocol, as well as implementation of its domestic ABS measures or instruments.

7.4.1 Institutional Mechanisms to Facilitate Cooperative Outcomes in ABS Implementation

Rainer (2002, p. 114) considers four institutional mechanisms that can facilitate cooperative outcomes in his attempt to look at policy learning within the EU. These are:

1. Norms that provide standards of behavior and outcomes
2. Changing configurations of actors and opportunities

3. Council decision routines that support policy learning and include standard mechanisms for resolving conflicts, and
4. Vertical differentiation within the Council system that can unblock issue-specific rigidities.

Rainer (2002 p.115) further points out that first, the rules of negotiation in the EU as a whole differs from those in individual member states. Member-state negotiations are embedded in formal and informal norms because of actor heterogeneity and uncertainty about the political agenda. In the ABS negotiations the different negotiating blocks also had to embed themselves in the formal and informal norms of the UN through the CBD for the same reasons as provided here by Rainer (2002 p.115).

According to Rainer (2002 p.116) informal norms and understandings can be expected to play an important role in "treaty-making" decisions, in an area where formal rules provide even less guidance for member states. Second, the EU institutional setting continually reconfigures coalitions of support and opposition in relation to member states' domestic settings. It brings different actors into the game and changes the opportunities for the pursuit of interests. In particular, it empowers supranational organizations that favor integration by providing them with formal rights in the decision-making process.

There is room for such learning to take place in the ABS implementation arena, but there is also a need for the empowerment of supranational organizations that would favor effective implementation of ABS to allow for the effective flow of benefits. These are actors that have the capacity, understanding and willingness to do this, with the remit of the ABS protocol and national domestic ABS measures.

Third, the EU decision-making routines not only provides standardized mechanisms for resolving issue-specific conflicts among member states, but also increases the amount of information available about the consequences of policy change (Rainer (2002 p.116). Member states are particularly likely to learn if the discussed proposals promote new ideas, if the proposals are complex or if the domestic situations are multidimensional, so that neither the EU rules nor their effect on the domestic structures can be easily assessed. These learning processes are likely to result in member states' changing their preferences if the processes appear to reveal that current domestic arrangements have limited efficiency or are inconsistent (Rainer (2002 p.116).

This is relevant to the ABS sector in that such routines become more important in the implementation of ABS in a situation of actor heterogeneity and uncertainty about the political and development agenda. Given the fact that due to implementation challenges already faced by many countries, there are not many successful cases of ABS, there is a critical need for those in the ABS game to learn from each other and obtain new insights from each other in terms of implementation.

Such learning would be enriched if the dynamics of the negotiation process would be altered and lessons learned during the negotiation process, is integrated in order to address specific conflicts that may arise amongst various players during the implementation of the ABS Protocol. The governing body of the ABS Protocol needs to ensure that any innovations during negotiations become routine - as such processes remain riddled with significant challenges and information asymmetries. The experts' presentations, such as those made during meetings of Subsidiary Body on Scientific Technical and Technological Advice (SBSTTA), could be a useful mechanism for ABS implementation.

Rainer (2002 p.116) finally maintains that the vertical differentiation of the Council, ranging from its working groups to the heads of state, helps to resolve profound conflict interests. (This means that shifting the level of negotiations upward[21] subjects issue-specific concerns to broader political considerations that can support, though not necessarily dictate, a cooperative outcome) (Rainer, 2002, p. 116).

This lesson was visible in the ABS negotiations, although generally the ABS negotiators were weary of using vertical integration as a means of cooperative outcome due to fears it could leading to dictatorship by one or the other interest groups e.g. industrialized countries or non-industrialized countries.. It was also further confounded by the fact that the ABS issues were complex, with the occurrence of fraud, and with many unknowns and thus it was amenable to information asymmetry. Capacitating the political decision makers may not be an easy task, as it would require significant time, coordination and financial resources, especially for developing countries negotiating as a UN regional block e.g. the African group of countries. An added challenge would be that some political decision makers would have multiple portfolios, which would result in conflicting demands and priorities both at the national and international level. Further confounding this situation would be the fact that movement at the top political

[21] This would require forwarding difficult issues, which cannot be resolved at the technical level upward to the political level for further discussion and negotiation at a higher level i.e. the ministerial level, and finally to the Head of State level, as required.

levels for some countries could be rapid and unpredictable, resulting in significant turnover. For most democratic countries turnover cycles could change every five years, whereas negotiations could take much longer than that, impacting on institutional memory, particularly if such change also happened at the national level.

7.4.2 Non-Continuity of Key Negotiators and Characteristics of the Key Negotiators

If there is too much of a movement in terms of the key negotiators it can impact on the social as well as psychological dynamics within the negotiations and the negotiation setting. This has implications for dealing with information asymmetries, building social capital and the rules that govern the process as time and effort may be wasted by all those involved in tracing back decisions and progress made. During the ABS negotiation ways of dealing with this effectively were found and progress was made since the core group of negotiators remained the same throughout the negotiating phase.

7.4.3 Use of Language and Ways of Communicating

It must be kept in mind that the human dimension remains an important aspect of any negotiating setting. The mode of communication as well as the communication concepts will have a bearing on the process through the social interactions. It can be argued that the use of a specific language in negotiations may be a potential barrier towards effective implementation of outcomes.

During the ABS negotiations, the key concepts that may be relevant in this context are the “Us vs Them” rhetoric. This rhetoric has burdened negotiation dynamics through concepts that were trying to view the world as two dimensional i.e. use of concepts pertaining to the North–South divide, developing vs developed countries, or provider vs user countries. Although these groupings were based on primary perceived interests, they did not capture the reality of true interests. This was due to the fact that concepts are framed within an archaic view of the world and, therefore, cannot reflect the reality of modern day life. There is thus a need for new approaches. Within the ABS field, we have seen the emergence of the concept ‘Megadiverse Group’ of countries. This grouping, however, also suffered from the realities on the ground and did not last throughout the negotiating process. What came to the fore was a move to the emergence of strategic interests which has not simply followed the long established UN regional groupings.

7.4.4 Blocking of Movement in One Forum to Await Perceived Progress in Another

This is a negotiating tactic that has bearing on the achievement of efficient outcomes. The ABS negotiations have seen some of this. There have been attempts to influence negotiations through insisting that one issue or another could not be dealt within the ABS negotiation since it is being dealt with somewhere else. This hampered progress as ABS was truly a cross cutting issue with the potential to affect other international treaty implementation. There was thus a need for the ABS Protocol implementation phase to move towards inclusion of stakeholders that could be impacted upon by such implementation, in order for them to provide input and through that clear any informational asymmetry that could hamper implementation. The ABS implementation would then proceed through adaptive management and could, in the end, result in outcomes that could signal progress for the related issue.

The following section considers how adaptive management, or learning by doing, assisted in moving the negotiations forward.

7.4.5 Innovation and Adaptive Management of the Negotiating Process for the Nagoya Protocol

As was pointed out by Siebenhüner (2009 p. 519, the establishment of reflexive mechanisms that would gather and assess the existing knowledge and prepare new decisions based on that knowledge, provided significant learning in the ABS policy arena. This could be viewed as innovation based on adaptive management to foster progress. Table 7.1 below provides a chronological account of the various methods and strategies that were employed to overcome the limitations and challenges of the UN institutional arrangements. It is based on the notion that to understand current challenges that one is facing and to overcome them, it is necessary to look into the past and take the best practice from that. The next step then would be to innovate in the present in order to have a measure of control of future events and of situations - in this case the implementation of the Protocol being negotiated.

The various methods below fall essentially into three broad categories as follows:

a) **Established UN negotiating methods**

(Contact groups, friends of the chair and friends of the president, established UN regional blocks, use of Co-chairs)

b) **Methods used in other environmental negotiating process**

(Bullet and Bricks, Scenario notes, Chatham House Rule, Side events, workshops and panel discussions)

c) **Methods that have emerged from innovation under the negotiations of the Nagoya Protocol on ABS**

(LLMMC, Group of Asia-Pacific Countries, Group of like-minded in spirit women, fortune cookies, the confessional process, high degree of ILC participation, rules of engagement)

Table 7.1 The Methods of Innovation Used That Can Be Regarded As Contributing To Institutional Learning towards More Efficient Negotiations Under The CBD

THE METHOD	TIME FRAME	COMMENTS
Contact groups, Friends of the chair and friends of the President	Kuala Lumpur, Malaysia 2004	Issues were negotiated in small groups called contact groups, polarized issues were negotiated by smaller groups called friends of the President, and difficult issues were handled by friends of the chair.
Formation of Groups such as the Group of Like-Minded Megadiverse Countries (LMMC)	Before the onset of negotiations and throughout the negotiations	The LMMC numbered 17 countries i.e. Bolivia, Brazil, China, Colombia, Costa Rica, Democratic Republic of Congo, Ecuador, India, Indonesia, Kenya, Madagascar, Malaysia, Mexico, Peru, Philippines, South-Africa and Venezuala
Menu of options on the scope, nature, objectives and elements for an international regime	2005, Bangkok	This document was lengthy, highlighting the need for serious compromise but also the complexity of the issue
Call for more gaps and analysis and work on a matrix of such gaps	2005, Bangkok	This call also highlighted the complexity of the issues, but at the same time served as a delay mechanism for the onset of full blown negotiations
The African draft legally binding international regime	Granada, Spain, 2006	This was an attempt to start the negotiations based on a draft regime with an assumed legally binding nature

Use of Co-Chairs	Through-out the negotiations	This allowed for ensuring that there is a balance and independence in the guidance of the negotiating process
Bricks and Bullets	Geneva, Switzerland, 2008	This was introduced by two Co-chairs of a contact group. An item classified as a “brick” meant it had consensus and was thus a building block of the Regime, whereas an item classified as a bullet meant that it did not have consensus and would therefore, not serve as a building block as it needed further discussion. It was also made clear that marking anything as a bullet did not mean that it was no longer considered a component of the international regime.
Chatham House Rules	2008, Bonn, Germany	This rule was evoked by the chair of a small working group. This group was set up to work on terms of reference for three technical experts groups. Discussions under the Chatham house rules managed to unlock significant understanding of key issues
Establishment of the group of like-minded Asia-Pacific countries	2009, November, Montreal, Canada	This group consisted of both developed and developing countries. This group was not an active collective participant in the negotiations due to fundamental differences between developing and developed countries.
Scenario Notes and non-papers Fortune cookies for those who made a difference	2009, Canada, Montreal	The two Co-chairs of the ABS working group prepared a scenario note in which they re-affirmed their commitment made at the outset of their tenure to transparency, openness and responsiveness. The non-papers covered operative text submitted by Parties and which became the basis of two separate contact groups on traditional knowledge as it related to ABS

High Degree of direct participation of indigenous peoples' groups in the ABS talks	Throughout the negotiations	This situation was a significant precedent and unique to the CBD amongst the environmental treaties
3-5 days meeting of the Friends of the Co-chairs meeting	January, 2010, Canada, Montreal	The group was established to try and find ways to convergence of positions and to find solutions to the key issues.
Inter-regional informal consultation prior to the ninth meeting of the ABS working group	March, 2010 Colombia	The group had specific and clear terms of reference as to the composition and work agenda
Establishment of the Like-Minded in Spirit Group of Women	2009, November, Montreal, Canada	The group comprised of a mixed group of women transcending the traditional UN divisions and seeking for gender balance
The Cali Setting	2010 March, Cali Colombia	The negotiating blocks were seated in a roundtable format with the chief negotiators at the head of each negotiating block
Meeting of Chief Negotiators only without representation of the Secretariat and the two Co-Chairs	2010 March, Cali, Colombia	This meeting was called by one of the Chief Negotiators after an impasse to try and find a way forward, determined by Parties only.
The ABC of ABS	2010 March, Cali, Colombia	This represent the core issues of the Protocol identified by the Co-Chairs
Rules of Engagement	2010 July, Montreal	These rules were set-up to allow for the negotiators to achieve consensus easier
Establishment of the Inter-regional Negotiating Group (ING)	2010 July, Montreal, Canada	The Group was established to move negotiations faster as the deadline for negotiating was fast approaching
ABS Working Group	2010 September, Montreal, Canada	The meeting could not resolve anything. However it served to maintain the negotiating momentum and sense of urgency
Confessions of negotiators	2010 October, Nagoya Japan	This setting was introduced by two co-chairs of a contact group to allow for the break of an impasse

Source: Own based on Ling (2010), Nijar and Fern (2012)

Side events (seminars, workshops and panel discussions) by NGOs, indigenous peoples' groups, international organizations and some governments as well as expert groups provided a useful way to synthesize some of the issues facing negotiators throughout the negotiations with a view to clarify interest, concepts and positions (Ling 2010). These were complemented by numerous and innovative strategies as can be seen in Table 7.1 above. Given the length of the table, not all the strategies were discussed here. However a few were discussed in this paper in order to demonstrate the innovation that occurred.

The formation of groups such as LMMC and the Asia Pacific group of like-minded countries was an interesting move that brought new dimensions to the negotiating table. It also represented the recognition that the traditional UN groupings could no longer suffice around certain issues. It also however, brought challenges in terms of leadership, key negotiators and common positions, as well as implications for the positions of the other groups to which they originally belonged, as well as confidentiality of issues discussed when a member belonged to two different groups during the negotiations e.g. the African countries in the LMMC. (Ling 2010, Nijar and Fern, 2012).

The bricks and bullets approach was first used in negotiations for the Cartagena Protocol on Biosafety. The use of the "bricks and bullets" led to the emergence of the first concrete proposals in the negotiations towards a potential functional regime.

During COP 8 the use of the Chatham House Rule[22] led to an open and frank discussion amongst the key stakeholders that helped to advance progress made through the bricks and bullets. From that point onward, learning started to take place based on the realization that consensus could be reached by using strategies that moves away from what were conceived of as archaic institutions that governed the UN system. The consensus rule, the arbitrary categories which no longer reflected the reality of representatives during the negotiations, as

[22] The Chatham House Rule is used when, in a meeting or part thereof, participants are allowed or given the freedom to use the information received, but neither the identity nor the affiliation of the speaker (s), nor that of any other participant, may be revealed. It is used to encourage openness and the sharing of information (Chatham House, 2014). This allows people to speak as individuals, and to express views that may not be those of their organizations and, therefore, encourages free discussion. People usually feel more relaxed if they don't have to worry about their reputation or the implications of what they say being publicly quoted (Chatham House, 2014).

well as current political pressures, were seen as some of the strategies that blocked learning and moving forward.

The use of “Friends of the Chair” is a United Nations practice whereby, in cases where the views and positions of countries are diverse and divergent, the chair of a negotiation group may select a much smaller group of negotiators who have been active, to informally meet for discussions or negotiations. The aim is to facilitate more in-depth and frank exchanges so that there can be a better understanding of positions and solutions sought to arrive at a consensus when formal negotiations resume (Ling 2010. p 58). This method was used repeatedly by the negotiations by both the co-chairs of the ABS working group and other chairs appointed during the course of the negotiations e.g. contact group chairs.

Another innovative reflexive mechanism was the use of ”fortune cookies” which were awarded to deserving colleagues who were able to work towards making a breakthrough towards a better understanding of the issues during the negotiations. This served as an incentive to other negotiators to do the same, with the hope of also being awarded with a “fortune cookie” for their efforts. The “fortune cookies” were awarded daily to negotiators who were regarded as deserving by participants who had made significant contribution towards advancing the state of the negotiations.

The Inter-regional Negotiating Group[23] (ING) consisted of five spokespersons self-selected from among the parties from each of the five UN regions, two representatives each from indigenous and local communities, civil society, research institutions and private sector, as well as the current (Germany) and incoming (Japan) COP Presidents. These representatives could be replaced, as needed, by each grouping. All other Parties and observers were also in the room to ensure transparency of the proceedings. Observers at the table could provide “guidance” on the items being negotiated, while textual inputs were the prerogative of the Parties. This right was later extended to representatives of local and indigenous communities provided their proposals were supported by at least one party (Ling 2010, p. 71). This set-up was an attempt to force negotiators to be focused and to move swiftly through the issues and towards dealing with the difficult issues. The use of “observers in the room” was an innovative step as well as the presence of ILCs at the negotiating table.

[23] The ING was set up by the two Co-chairs of the ABS Working Group as an attempt to help advance negotiations in a smaller group, and followed UN procedures closely with a bit of digression from the rules and procedures.

Use of language also emerged as a reflexive mechanism e.g. the core chairs coining the concept of “the ABC of ABS” which represented access, benefit-sharing and compliance. The ING focused on these issues in the first week of negotiations. The rules of engagement were introduced by the Co-Chairs and these rules urged Parties to “exercise maximum restraint” and “avoid insertions that only reflect your positions”. Any proposed text should improve the draft protocol and “accommodate the views of others”. Parties were urged to try to accommodate each other’s concerns while ensuring that their own interests were reflected in a balanced manner, bearing in mind that the protocol was to implement the CBD’s third objective of fair and equitable benefit-sharing. (Ling 2010, p 74).

Amongst the last innovative reflexive mechanisms in Nagoya during the negotiations was the emergence of the “confessional process” that allowed for a transparent, yet confidential practice driven by the need for key actors i.e. head of delegations and chief negotiators to disclose their absolute red line on some of the most difficult issues. This process was based on the idea that a confession of the chief negotiators from the various regional groups as to their absolute red lines regarding the issue of compliance could help unlock the impasse on this issue. Chief Negotiators lined up in a queue to have a “confessional session” with the two co-chairs about their absolute red lines as per their negotiating mandates, with the understanding that the co-chairs would never disclose these “red lines” and that the confessions would be used by the negotiators to develop a compromise text that would be close to the redlines of all regions but would maintaining a fine balance that was acceptable to all negotiating blocks. Again goodwill towards innovative reflexive mechanisms prevailed and yet another step towards the adoption of the Protocol was made.

Other methods employed were changing of seating formats e.g. the Cali setting, the friends of the chair meetings, etc. which again provided opportunity for in-depth, frank and unbiased discussion on the challenges that faced the different actors. Use of time as a limiting factor was also identified as a reflexive mechanism as well as use of co-chairs respected by all sides and who maintained a professional, neutral but demanding stance.

One key turning point in the negotiations was also the draft text that was tabled by the Co-Chairs, during a session in Colombia, as a basis for further negotiation, and which became known as the Cali text. Another reflexive mechanism was to ensure the continuity of the key actors throughout the process, especially for maintaining momentum and for furthering understanding of the key issues.

As was pointed out by Siebenhüner (2005 p. 517), the professional facilitation through the Secretariat was maintained. This was despite the fact that reflexive mechanisms had to be put in place and it became evident that the best process would be for the Secretariat to remain a professional facilitator and not a player or actor in the game. The role of the Secretariat staff also became very important as the holders of institutional memory during the entire process of the negotiations.

The identification of the African Group as one of the major actors was another major reflexive mechanism , and led to a significant shift in the dynamics of the negotiations as well as in the understanding of the process by the group itself and the other actors. This was mainly due to the emergence of the ABS Capacity Development Initiative that allowed for this renewed sense of purpose, conviction and ability to negotiate as equal partners with reduced information asymmetry in the African group.

The emergence of a strong, empowered, able and willing-to-engage African Group, was a reflection not expected by many actors. This new actor (African Group) was able to forge alliances based on its new understanding of its values, interests and norms and caught many unaware in both the traditional allies[24] and the user camps.

In the dying moments of the negotiations, yet another reflexive mechanism came into play when the President of the 10th Conference of the Parties to the CBD produced a carefully balanced text remaining objectively close to the issues and challenges negotiated, and maintaining the key conclusions and spirit of the text developed by the actors. This text contained the unresolved issues that were essentially at the heart of the negotiations of the Protocol – derivatives, scope, publicly available TK and the strength and effectiveness of the compliance mechanism (Nijar, and Fern, 2012 p. 29). This helped the actors to reflect and make the quantum leap[25] towards the adoption of the Protocol. As Nijar and Fern (2012 p.29) put it “the protocol was concluded by a process that did not involve negotiations’

[24] The African Group traditionally would ally with other developing countries blocks such as the Group of 77 plus China countries, Latin America, Asia and the Small Island State and the Caribbean. During the ABS negotiations, however, the African group chose to look at its interests, and based on that, made strategic alliances which sometimes meant going against the advice and directions of its traditional allies e.g. calls for walking out of the negotiations by its allies were repeatedly not followed by Africa since they had more to lose than their allies.

[25] As pointed out by Nijar and Fern the final end product of the Protocol was not negotiated technically by Parties. The question remains whether if the Presidency did not do what they did whether the Protocol

Just as it seemed unlikely in the World Summit on Sustainable Development (WSSD) for the decision to be taken, it seemed just as unlikely for the Protocol to be concluded in Nagoya. Yet these collective reflexive mechanisms helped all actors to make that jump in faith and to conclude the negotiations.

Finally, the various innovations used under the negotiations of the ABS protocol point to the fact that adaptive management was needed to break the organizational culture of the UN if progress was to be made. As is evident from the table above. the innovations and diversions from established practice increased as the intensity of the negotiations increased and as the deadline approached. New groups were established and routines were continually being broken and the setting kept changing, incentives were devised, strategies kept being refined, dropped and improved. Numerous meetings official and unofficial, behind the scenes, in the corridors, notes sent to each other in the room, during smoking sessions, bars and hotel rooms were employed, all to advance the negotiations and to break through the rigid and archaic rules of the UN that did not easily foster the achievement of consensus.

7.4.6 A New Way of Interaction for ABS Implementation

There has not been much tolerance for institutional learning within the UN system. It can, however, be argued that the ABS process pushed boundaries and a case can also be made for the achievement of sustained success of institutional reform within the negotiating process. This will be even more required during the process of implementation.

The lessons learned above point to the need for a new reflexive mechanisms to approach the full and effective implementation of the Nagoya Protocol. In the future it will be particularly important to review the communication structures and to look at the outsiders in this structure. There will also be a need for the business and industry sector, as well as research and academia, to come to the fore in terms of implementation of the Protocol if this process of trust building and learning is to continue, which this study argues it must.

Ostrom (2009 p. 31) in looking at the challenge of implementation of the climate change strategies, stated the following:

“Acknowledging the complexity of the problem, as well as the relatively recent agreement among scientists about the human causes of climate change, leads to recognition that waiting for effective policies to be established at the global level is unreasonable. Rather than only a global effort, it would be better to self-consciously adopt a polycentric approach to the problem

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would have been concluded in Nagoya. Thus the statement that this process introduced by the Presidency assisted the parties to move beyond their positions and adopt the Protocol.

of climate change in order to gain the benefits at multiple scales as well as to encourage experimentation and learning from diverse policies adopted at multiple scales."

Although ABS is different from climate change this statement has significant implications for ABS implementation. ABS is complex - there is a global level policy framework in place, the issue of bioprospecting has been researched by scientists for a while now, economists have joined the party and, what now essentially remains is implementation, which will lead to the gaining of benefits at multiple scales.

Ostrom (2009 p. 35) points out that the extensive empirical research on collective action discussed has repeatedly identified the central and necessary core of trust and reciprocity among those involved, in order to be associated with successful levels of collective action. Ostrom (2009 p. 35 in referring to climate change states that if the only policy related to climate change was adopted at the global scale, it would be particularly difficult to increase the trust that citizens and firms need to have that other citizens and firms located halfway around the globe are taking actions similar to those being taken "taken at home." When participants fear they are being "suckers" for taking costly actions while others free ride, more substantial effort is devoted to finding deceptive ways of appearing to reduce emissions while not doing so. A key problem thus (Ostrom, 2009 p. 36) points out is monitoring to ensure compliance or social compliance.

The advantage of a polycentric[26] approach is that it encourages experimental efforts at multiple levels, as well as the development of methods for assessing the benefits and costs of particular strategies adopted in one ecosystem, and comparing these with results obtained in other ecosystems. Building such a commitment, and the trust that others are also taking responsibility, can be more effectively undertaken in small-to medium-scale governance units that are linked through information networks and monitoring levels.

Although the issue Ostrom (2006) addresses is that of climate change, there is relevance for a polycentric approach in the implementation of ABS, thus taking it further from the institutional or organizational learning over the years. It can be argued that despite the complexity of ABS and of issues surrounding effective ABS implementation, the necessary building blocks are in place. It is the act of placing these building blocks in a functional manner at multiple levels that

[26] A poly centric approach can be viewed as a system of interaction of many circles in a synergistic manner.

is the challenge i.e. the Nagoya Protocol at the international level, regional level strategies that are coordinated and harmonized, and the various national level measures that are coordinated and harmonized at the national level. At all these stages effective ABS implementation would require a polycentric approach towards collective action and decision-making.

At all stages, there would also be the one big circle representing traditional ABS players (governments both providers and users) and the traditional ABS outsiders (Industry, ILC, Government departments (finance, trade, research and development, education and national development), civil society and Research and Academia. These two circles would merge at an area called the transitional area/ area of synergy. In this area old and new would interact together, new approaches would emerge and be tested, new language would develop and the elements of organizational learning would need to be employed to allow for adaptive management of ABS i.e. learning by doing.

The use of the circles for traditional players and traditional outsiders takes into account that some of these players may be involved in the other circle. The challenge however lies in the decision-making process. The argument is that since the minimum standards are now in place at the international level (ABS Nagoya Protocol) and the challenge of information asymmetry have been addressed, there should be enough goodwill, trust and commitment for the political decision makers to allow the old traditional ABS players to be fully and effectively part of the collective process. This is to ensure that they contribute meaningfully to the collective ABS implementation decisions and that these “close to the on-the-ground” political and institutional realities are taken into account.

It could be expected that in the two circles resulting within the process, a larger circle would be embedded demonstrating the following characteristics:

- transparent multi-and trans-disciplinary and sectoral communication, interaction and coordination towards collective decision making and action
- Functional and efficient translation of the Nagoya protocol into the building blocks of a standardized system at the international level influencing national systems
- Traditional ABS outsiders are consulted and are allowed into contributing meaningfully to the decision making process
- The emergence of new institutions or new rules that govern the ABS game or system, based on true reflection, institutional learning and adaptive management of ABS implementation.

The pay-offs of using such a polycentric approach towards ABS implementation could be expected to be:

- Reduced transaction cost
- Reduced information asymmetry
- Improved information
- Improved communication
- Effective trust building that may result in enhanced political will and commitment towards ABS implementation.

The objective of this approach is to allow for the flow of benefits (monetary and otherwise) through the ABS system for both user and provider of genetic resources and traditional knowledge. These benefits would need to be translated and framed in terms of the social context e.g. contribution to national economic development as this is more effective in changing behavior than messages stressing just factual information (Shultz et al, 2007 and Mumford, 2007 cited in Ostrom, 2009 p.38).

This would then give rise to the ultimate aim of sustainable use and conservation of biodiversity.

7.5 CONCLUSION AND RECOMMENDATION

This chapter has made the case that institutional learning indeed took place during the negotiations for the Nagoya Protocol. The case is also put forward here that the challenge would be to ensure that the formula followed, which is maintained here is successful, could be institutionalized and maintained, in order to inform the ABS policy arena in terms of implementation.

A polycentric approach is being proposed for ABS implementation, based on the lessons from the institutional learning which were observed to occur during the negotiation process. The use of the polycentric approach that includes both traditional players and traditional outsiders, it was here shown, would allow for more enriched debates and perspectives to be introduced into the policy arena and would ensure a shift of balance that would be more realistic, particularly since the policy-making process may have potential unintended consequences on some of the players. These unintended outcomes could be minimized. The private sector would need to be allowed to be integrally involved in the implementation of the Protocol, as well as the indigenous and local communities, if implementation were to be effective. The polycentric approach demands the inclusion of all relevant stakeholders to be involved.

It was also further recommended here that some of the strategies outlined in this chapter be institutionalized within the CBD, and especially in the work of the implementation of the Nagoya Protocol. It was further recommended that ongoing studies should be carried out, considering institutional learning within the various environmental treaties in order to outline underlying synergies and so that more effective negotiations could be fostered in which social capital i.e. trust, could be fostered.

The argument is made here for a need to critically consider the challenges the negotiations faced from the polycentric approach perspective in order to further develop and refine them over time in the interest of efficiency and effectiveness, as well as in terms of implementation of global multilateral environmental negotiations and the implementation of the outcomes of those negotiations.

CHAPTER 8

AN ASSESSMENT OF NAMIBIA AS A CASE STUDY, AND ITS UTILISATION OF THE CRITICAL FACTORS IN RELATION TO ABS

However, the Namibian experience predicts that we would appoint a consultant at great expense that would write a glowing recommendation, and that we would believe that report.

~Anon

8.1 INTRODUCTION

Namibia is situated in the south western part of Africa, just above South Africa and below Angola. The country's ecological distinctiveness is partially defined by the Namib Desert along the western coastline and the Kalahari Desert in the east. Its coastline borders the cold and fertile Atlantic Ocean, characterized by the cold Benguela Current (Barnard et al, 1998). These characteristics give Namibia an interesting biogeography - with a myriad of species which display unique evolutionary adaptations that enable them to survive and inhabit the hostile environments of Namibia, characterised by low and variable rainfall, hot deserts conditions and poor soils (Barnard et al., 1998).

Namibia gained independence from colonial apartheid South-African rule in 1990.

The country inherited a suite of policies and legislations that, over twenty years later, no longer answered the needs of a newly independent country (Seeley and Montgomery, 2009). This contributed to a flurry of policy development and legislation over the next decade, based on a newly adopted and progressive, innovative and modern Constitution that set the stage for Namibia's development post-apartheid. This Constitution became one amongst the few in the world with specific explicit reference to the importance of biodiversity, an aspect which is crucial to the whole debate of ABS. Article 95 (l) of the Namibian Constitution sets the principal foundation for all environmental action plans, policies and legislation. The article reads " *The state shall actively promote and maintain the welfare of the people by adopting .... policies aimed at maintenance of 'ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of living natural resources on a sustainable basis for the benefit of*

all Namibians, both present and future....(Namibian Constitution, 1990). It is noteworthy to point out that the Constitution was written two years before the international call was made by world governments in Rio 1990 to conserve and sustainably use biodiversity through the objectives of the Convention on Biological Diversity (CBD). At this conference, Namibia presented its Green Plan that, together with the Constitution, set the tone for sustainable development and served as the guiding document for an array of policies and programmes (Seely and Montgomery, 2009 p. 9).

8.2 OBJECTIVE OF THE STUDY

This chapter presents the case study of Namibia and has two specific objectives which are related to the specific objectives one (1) and two (2) of the overall thesis. They are as follows:

8.2.1 Specific Objective 1

To confirm whether the critical factors (Chapter 6) can be used as a comparison within a country to track changes in terms of dealing with ABS over time.

To test the results from the global survey (discussed in chapter 6 of this thesis) in terms of assessing the effectiveness of Namibia's approach towards ABS implementation over time.

8.2.2 Specific Objective 2

Confirm whether the critical factors are impacted by the dynamism of the evolution of ABS due to internal and external factors in the country

This study builds on the results obtained from the global survey on the critical factors necessary for successful or effective ABS implementation. Under this survey, indicators for the critical factors were developed and will be used in the assessment in this study.

8.3 LITERATURE REVIEW - THE EVOLUTION OF ABS IN NAMIBIA

8.3.1 ABS in Context - Key Concepts of ABS in the Namibian Context

It is important to have a brief overview of the key concepts around ABS to set the context for the rest of the chapter. ABS or Access and Benefit-Sharing, has three central concepts namely bioprospecting, biotrade and biopiracy..

Bioprospecting, refers to the "...collection, search for, research and use of biological and/or genetic material that are isolated, if possible synthesized, patented for purposes of applying the knowledge and products derived there from for scientific and/or commercial purposes." (Martinez and Biber-Klemm, 2010 p. 3; UNU cited Du Plessis, 2008 p.1 and UNEP, 2012)". In short, it can also be viewed as the systematic research, collection and utilization of biological resources (Krugman and Katjirua, 2007 p. 10).

This process involves the collection by researchers of many different kinds of plants and animals from their natural habitat, often guided by local knowledge about the location and use of these resources. Bio-prospecting then leads to the second concept which is biotrade - the "trade in biological resources".

In any industry, there have been cases where the rules of the game seems not to have been followed and this leads to the third concept, namely biopiracy - the "unauthorized and uncompensated taking and use of biological resources for valuable research purposes, or in other words, the illicit appropriation of genetic resources and/or associated information and the generation of profitable products (Martinez and Biber-Klemm, 2010 p. 3). This misappropriation of genetic resources and use of traditional knowledge by some firms has caused them to be called biopirates.

The difference between biotrade and bioprospecting is that bio-trade is a wide catch-all phrase covering everything from raw materials to ecosystem services. Biotrade, therefore, according to du Plessis p. 3 in du Plessis and Becherer (2008), can be regarded as trade in biological resources that is NOT classical bio-prospecting (i.e. aimed at generating exclusive or formal Intellectual Property). Du Plessis p.3 in du Plessis and Becherer, (2008) further admonishes that it is important to note this distinction because bio-trade can generate substantial pro-poor benefits at the local level and caution should be taken that ABS administrative, policy and legal measures do not hinder the trade in biological resources.

The issue of ABS has been around for decades and started with the advent of colonialism and empire building by the powerful nations of the world. The emergence and establishment of multilateral attempts by the world governments in the last two decades to regulate access to genetic resources and protect knowledge and the ratification of the Nagoyo Protocol[27] in 2010 has brought the issue of ABS to the forefront and has created awareness and advocacy for the complexities around it and the need for effective regulation.

The negotiations towards an international regime on ABS began in all earnest after the call by the world governments in 2002 in Johannesburg[28], for a legally binding instrument on ABS. The negotiations culminated in the adoption of the Nagoya Protocol in Japan in 2010. The

[27] Chapter 3, section 3.6 provides a discussion on the link between the Nagoya Protocol and bioprospecting

[28] The World Summit on Sustainable Development (WSSD) Rio + 10 was held in Johannesburg, South Africa.

Protocol is now open for signature, ratification and accession at the UN Head Quarters in New York.

The Nagoya Protocol has four core elements, which are access; fair and equitable sharing of benefits; compliance and traditional knowledge associated with genetic resources.

8.3.2 The Namibian Response to ABS

Namibia became a signatory to the CBD in 1992 and ratified it in 1997. By then measures were already being developed at national level to give effect to Article 95 (l) of Namibian Constitution. In fact, Namibia's efforts to put in place a national ABS legislation date back to the late 1990s. Namibia's National Biodiversity Programme (NNBP) was established in 1994 and the first official meetings of the biotrade working group were held in 1998. It is important to note that work first started with a focus on biotrade and not ABS per se. This has implications on the evolution and understanding of ABS in Namibia today, as a significant number of products were developed under biotrade that may not qualify as ABS products. The importance however, is that this work contributed to Namibia's approach that later developed as the national approach to ABS. Work on drafting Namibia's policy and legislation on access to genetic resources and traditional knowledge protection was initiated in 1999 by the Ministry of Environment and Tourism (MET) together with the Ministry of Agriculture Water and Rural Development (MAWRD) (Krugman and Katjirua, 2007 p. 18).

In Namibia, as within other parts of Africa, there was an increased awareness on ABS fueled by cries of rampant biopiracy across the continent. Moreover, in the international work on biosafety and its implications for biodiversity and rural communities, calls were also being made for a model law on ABS under the Organization of African Unity (OAU) which later became the African Union (AU). Namibia became a critical player on the work for an ABS model law under the OAU as of 1998. This instrument was finalized and became known as the OAU model law on the rights of local communities, farmers and breeders (OAU, 1999). Namibia's effort to develop its ABS legal and administrative framework was heavily influenced by the development and finalisation of the OAU Model Law on ABS (Krugman and Katjirua, 2007 p. 18). The various drafts of the Namibian Legislation subsequently introduced some important adjustments to the OAU Model. Notably, farmers' rights and breeders' rights sections that were included originally in the ABS draft legislation were removed with the intention that they be covered in two separate pieces of legislation that were specifically on underdevelopment (Krugman and Katjirua, 2007 p. 18). The OAU Model Law warrants a bit of discussion as it was given great prominence in the ABS policy arena in Namibia.

In 1997, the OAU (Organization of African Unity), in response to the activities at the international level embarked on a process to develop model legislation on ABS to assist African countries in fulfilling their obligations under the CBD as well as under the TRIPS [29]agreement of the WTO. This must be viewed within the context of the prevailing international debate on ABS at that time. The CBD mandates countries that have ratified the Convention to regulate access to biodiversity within their borders, respect the rights of local communities, and protect their traditional knowledge, while TRIPS requires all members to protect IPRs on plant varieties, be it through patents or a *sui generis* system. In 1998, the OAU Heads of State endorsed the ABS Model Law and recommended that it become the basis of all national laws on the matter across Africa. Countries could, therefore, adopt it without amendment, or use it as a skeleton upon which to suit their national circumstances.

The OAU Model Law on ABS aims to balance the rights of farmers, plant breeders and local communities based on the explicit recognition that in Africa all parties have an important role to play in the conservation, improvement and sustainable use of biodiversity. The Model Law has four components (OAU, 1998) which are: Access to Biological Resources, Community Rights, Farmers' Rights and Plant Breeders' Rights.

Internal national reflection by actors within the Namibian policy arena around the year 2000, and consideration about what approach to take to ensure effective implementation of ABS in Namibia, resulted in the changes being adopted in Namibia in terms of how to deal with the provisions of the African Model law.

8.3.3 The Namibian National Biodiversity Strategy and Action Plan and ABS Implementation

This strategy needs to be reflected on since it provided the first substantive framework and strategy for Namibia in terms of a road map for ABS in the country. Namibia finalized its National Biodiversity Strategy and Action Plan in 2002, in time for the World Summit on Sustainable Development (WSSD). It was a process that involved massive consultatory processes amongst all stakeholders in a truly multi-sectoral, cross-sectoral, interdisciplinary and multi-disciplinary fashion.

[29] The Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) is an international agreement administered by the World Trade Organization (WTO) that sets down minimum standards for many forms of intellectual property (IP) regulation as applied to nationals of other WTO Members. The TRIPS agreement introduced intellectual property law into the international trading system for the first time and remains the most comprehensive international agreement on intellectual property to date.

The Namibian Secretariat of the National Biodiversity Program deliberately decided to include all available knowledge of the state of biodiversity and the known associated challenges based on the Namibian Biodiversity Country Study that was concluded in 1998 (personal comm. Zeidler, 2012). This decision was taken in the fully knowledge that the financial resources needed to implement such a strategy would be astronomical and that the requisite human resource pool with the necessary knowledge and skills was limited. This strategy was yet another milestone for Namibia's innovative approach towards biodiversity conservation, management and use. The NBSAP had as its objective *"to protect ecosystems, biological diversity and ecological processes through conservation and sustainable use, thereby supporting the livelihoods, self-reliance and quality of life of Namibians in perpetuity" (Barnard et al, 2002).* For functionality, 10 strategic themes with 55 strategic aims had to be addressed, and 242 time-bound targets had to be reached through focused implementation. The implementation of the NBSAP was coordinated by the Ministry of Environment and Tourism, with actions carried out by government agencies, NGOs, local communities, donor projects, and the private sector.

It has subsequently been updated and reviewed to cover the next decade (2011 – 2020). The review showed that 102 targets were fully achieved, with 93 partly achieved (80.4% of targets fully or partly achieved). The NBSAP Chapter 2 (sustainable use of natural resources) Strategic Aim 2.5, dealt specifically with biotrade and bioprosprecting and had the following three sub aims which are as follows:

1. Improve national and local capacity to benefit from and control biotrade
2. Raise public and political awareness of issues, costs and benefits of biotrade and bioprospecting
3. Promote effective cooperation at relevant levels.

Appendix 13 provides a full outline of the ABS strategy as reflected in the NBSAP.

Under chapter 9 of the Strategy (Capacity-building for biodiversity management in support of sustainable development) strategic aim 9.4 was to "strengthen communities to participate as equal partners, e.g. in biotrade and bio-prospecting". This was to be achieved through the following actions:

1. **Develop an Equitable Benefit-Sharing Framework**

    - Formulate *sui generis* legislation, regulatory structures, and mechanisms for the protection of community intellectual property rights considering customary and other laws;
    - Establish a mechanism to monitor the benefits for communities from agreements involving profitable use of their knowledge, and the application of prior informed consent (PIC) procedures;
    - Identify new income-generating activities based on biological resources and empower local communities to manage those resources sustainably;
    - In collaboration with local communities, establish a national Indigenous Knowledge Systems Fund, with clear guidelines on the Fund's sources and potential uses, administrators, financial control, and role in resource management and cultural development.

2. **Promote Mechanisms for Communities to Share their Knowledge with Other Partners**

    - Create public awareness of and respect for the value of indigenous knowledge systems through the mass media and education curricula;
    - In collaboration with local communities, identify and analyse existing customary codes of ethical conduct, and develop appropriate models of ethical conduct for information on indigenous knowledge systems;
    - Initiate dialogue with local communities on:
        - The content and process of relevant UN procedures and conventions such as CBD, UNCCD and UNFCCC;
        - Case studies on the impact of international agreements, such as TRIPS, UPOV and ITPGR, on local communities;
        - Local communities 'rights over their knowledge and resources.

In retrospect, these two strategic aims did guide Namibia's approach towards biotrade and bioprospecting in many regards, as will be seen in the following sections. This strategy was

forward looking and addressed most of the relevant issues at that time with regards to ABS implementation, both at the national and international level.

The aim for effective cooperation, namely regulatory efficiency, called for the inclusion of a range of stakeholders at the national, regional and international levels. With this in mind, Namibia started to engage aggressively in the regional and international ABS policy arena. Namibia further participated in the negotiations of the Bonn guidelines which were finalized in 1999 under the CBD.

A consideration of this strategy in light of this study seem to indicate that the critical factors that formed the basis and foundation of this study were all largely covered and, should, therefore, have assured effective implementation.

In 2002, in Johannesburg, South-Africa, the world commemorated the first ten years after the Rio Earth Summit. A call was made for the negotiations of a legally binding international regime on ABS. In 2004, Namibia chaired the first round of negotiations for an international regime. As from 2007 to 2010, Namibia served as the chief negotiator on ABS for Africa until the adoption of the Nagoya Protocol on ABS. Table 8.1 below depicts the chronological events of the history of ABS evolvement in Namibia.

Table 8.1 Chronological Depiction of Namibia's Involvement in the ABS Debate

Year	ABS event for Namibia
1990	Article 95 (l) of the Constitution formulated
1992	Namibia participates in the Rio Earth Summit, CBD is adopted
1994	Namibia National Biodiversity Programme established
1997	Namibia signs and ratifies the CBD
1998	• First meeting of the biotrade working group as well as the indigenous knowledge working group • Namibia becomes involved in the development of the OAU Model Law
1999	Process to develop legal framework for ABS is jointly initiated by two Ministries
2000	The Namibian National Biodiversity Strategy and Action Plan (2000 – 2010) is completed containing an action plan for biotrade and bioprospecting
2002	Namibia participates in WSSD in Johannesburg where the call is made for an international regime on ABS
2004	Namibia Chairs the first round of negotiations of the ABS regime
2007	Namibia becomes ABS Chief Negotiator for the African Group
2010	The Nagoya Protocol on ABS is finalised
2011	Nationwide consultation on the draft ABS bill and the Nagoya Protocol is embarked upon
2012	Namibia's ABS bill is cleared for tabling in Cabinet

Source own: based on the literature (Namibian Constitution (1990). Art 95 (l); Barnard, p. (Ed) (1998); Barnard, P., Shikongo S., & Zeidler, J (eds)(2000); MET (2002), Shikongo (2013)

With the adoption of the Nagoya Protocol, Namibia seemed to have put in place a strategy at the national level which was based on internal reflection about what exactly the Protocol meant for the national level implementation of ABS. This was evident from the nationwide public consultations that occurred shortly after the adoption of the Nagoya Protocol. These consultations also included briefing meetings with high level decision makers on ABS in Namibia.

Attention will now be turned to what emerged from literature that could be constituted as the development of the Namibian ABS legal framework.

8.3.4 Development of Namibia's ABS Legal Framework

The Namibian process of developing a national ABS policy, legal and administrative measures, took a significant amount of time to be completed. By the time of completion of this study, the draft bill was with Cabinet for consideration. The process over the years resulting in changes in approach and continual self-reflection on the debate within Namibia on ABS, as well as the within the international debate, was aimed at the development of a responsive piece of legislation. Numerous workshops and meetings took place to allow for this continual reflection at a national level.

The key objectives of the legislation could be summarized as follows (Draft of the ABS bill, 2010):

- Promote building of national and grassroots scientific and technological capacity
- Promote entrepreneurial spirit
- Promote appropriate mechanisms for fair and equitable sharing of benefits
- Provide appropriate system of access to genetic resources and associated TK and technologies subject to PIC
- Recognise and protect farmers' Rights and plant breeder's Rights.

The ABS Working Group took a conscious decision in 2007 not to finalise the Namibian ABS legal framework until the International Regime had been concluded. An Interim Bioprospecting Committee (IBPC) was, therefore, established to serve as Namibia's ABS interim measure. This proposal was first put forward in August 2002 and had nothing to do with the international regime, but rather with the slowness of the national process (du Plessis, *2013 pers. comm*). The idea was then further concretised in October 2003 at a national ABS stakeholder conference (Krugman and Katjirua, 2007 p. 18). The rationale for putting in place the IBPC was derived from the perceived urgent need for an interim mechanism to ensure greater coordination, consolidation and transparency of bio-prospecting and bio-trade activities in

Namibia, thereby preventing missed opportunities to develop genetic resources into potential sources of income for Namibia, while at the same time guarding against unlawful exploitation and bio-piracy.

In support of the establishment of the IBPC, the Cabinet Memorandum provided a summary list of recent examples of bio-trade and bio-prospecting activities in Namibia, which demonstrated that bio-prospecting was a reality with important implications and significant potential benefits for Namibia (Krugman and Katjirua, 2007). The IBPC was established by a Cabinet Decision in August 2006 (Krugman and Katjirua, 2007 p. 103).

The terms of reference of this multi-disciplinary and cross-sector stakeholder committee was to (RoN, 2006 and UNEP, 2012):

- coordinate bio-trade issues and coordinate the development of bio-trade and bio-prospecting policies for Namibia;
- facilitate and promote bio-prospecting activities in Namibia that would ensure optimal value addition to natural products before export from Namibia;
- collaborate closely with all relevant institutions to ensure sustainable resource use of wild-gathered products and build Namibia's reputation for the sustainable supply of quality natural products;
- use relevant international guidelines and protocols for access to genetic resources and benefit-sharing, such as the Bonn Guidelines of the CBD, and the International Treaty on Plant Genetic Resources for Food and Agriculture;
- inform and train local communities on the value of their traditional knowledge;
- negotiate and conclude appropriate agreements with potential bio-prospecting partners;
- issue, and revoke in event of non-compliance, bio-prospecting and bio-trade licences and permits; and,
- promote the development of consensus positions concerning cross-border resources.

The underlying assumption and objective for the facilitation and promotion of bio-prospecting in Namibia was twofold. The first was to enhance national income by facilitating and promoting the commercial sale of products produced from Namibia's natural/indigenous biological resources. Secondly, it was aimed at enhancing the empowerment of Namibian natural resource producers through income creation, benefit sharing, value addition and technology transfer - through making use of the law of contract and existing laws and regulations as appropriate (du Plessis and Becherer, 2008 p.8).

Since the IBPC essentially had to operate in an environment where much of the activities were new, a modus operandi for the IBPC was developed based on the established best practice of that time (du Plessis and Becherer, 2008 p.9). The mode of operation included the following broad terms of reference:

- grant and issue a bio-prospecting permit, which can be an academic research permit, a commercial research permit or a commercial exploitation permit;
- facilitate the expediting of appropriate permits (e.g. research collection permits);
- monitor compliance with agreements and permit conditions;
- seek out and facilitate bio-prospecting-related capacity-building and training opportunities for Namibian stakeholders;
- provide a focus for donor-funded activities aimed at boosting national bio-prospecting capacity;
- raise public and community awareness about the need to regulate access to genetic resources in the national interest.

In drafting the resource legal framework those involved were confronted by a multitude of challenges that they had to consider. They can be summarised as follows (Shikongo, 2008 p. 3 in Du Plessis and Becherer, 2008):

- Demands side /market issues
- Harmonization with national, regional and international agreements
- Education and awareness building
- Determining who constitutes a community
- Determining who should profit from a benefit-sharing mechanism
- The land issue: Who has access to the land? Who has access to the resource?
- Protection of knowledge innovations and practices of indigenous community, IPR and community rights
- Who is helping the communities to maximally capitalize on their resources once access and benefit-sharing has been secured?

These issues were deliberated upon in many forums and workshops amongst players in the ABS policy arena within Namibia. It was a challenge, but attempts were made to arrive at ways forward that could lead to the establishment of a national approach towards ABS in Namibia.

8.3.5 Emergence of a National Approach towards ABS

Namibia is widely recognised, along with a few other countries such as Peru and Nepal, as having developed a relatively sophisticated biotrade programme, and having done a lot to pro-actively develop income opportunities based on indigenous resources (Du Plessis and

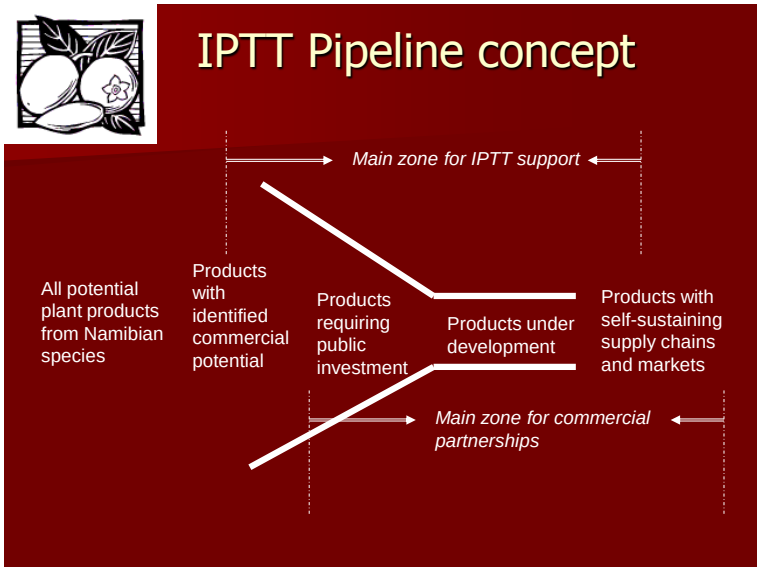
Becherer, 2008 p. 1 and UNEP, 2012 p. 1). This recognition is due to the concerted effort of dedicated Namibians[30] who had worked on ABS over the years. Their work led to what became Namibia's national approach to ABS.

The work by a multitude of stakeholders in Namibia from across sectors since the debate on the ABS policy arena started in the 90's, and eventually led to a concrete approach towards biotrade implementation - known as the pipeline approach (UNEP, 2012 p. 15). It was essentially done by adopting a coordinated national process, steered by multi-stakeholder Indigenous Plant Task Team (IPTT), with their own budget. The IPTT operated based on an agreed strategy and action plan, but implementation was guided by flexible, market-driven responses.

It was also underpinned by the understanding that information sharing would maximize synergies and was, thus focused on addressing information asymmetry amongst the players. It operated under the principle that Namibian resources were needed to leverage further public and private investments through a focal point. It allowed for effort and resources to be applied where they would most urgently be needed, thus avoiding a complete standstill when development of one resource would temporarily be halted by external factors (Du Plessis and Becherer, 2008 p. 7).

[30] Pierre du Plessis, Toivo Uahengo, Steve Carr, Sem Shikongo, Dave Cole, Phoebe Barnard, Martha Kandawa-Schulz are amongst the individuals who have over the years been integrally involved in ABS.

The pipeline approach is depicted below:



Source: Namibian IPTT

Figure 8.1 The Namibian Pipeline Approach

The pipeline approach operated under the following principles that were agreed to by all stakeholders (du Plessis and Becherer, 2008 p. 7).

- Community demand, aimed at maximizing primary producer benefits, is essential
- Maintain a balanced approach to a variety of resources ("few eggs in many baskets")
- Focus on securing partnerships with well-resourced commercial partners
- Work closely with markets
- Be flexible and responsive to market signals

The IPTT experience pointed to the fact that the pipeline approach had a number of strengths (du Plessis and Becherer, 2008 p. 7):

- Allows efforts and resources to be applied where they are most urgently needed
- Avoids total hang-up when product development is delayed by circumstances
- Facilitates synergies among "generic" inputs, e.g. project coordination, market liaison, public-private partnerships
- More likely to result in diversified (i.e. resilient) production systems
- Open to innovative partnerships.

Due to Namibia's biogeography a number of interesting bio-prospecting cases emerged over the years with some yielding results, whilst others were not pursued (Du Plessis and Becherer, 2008 p. 7 and RoN, 2006).

Within the regional context of the Southern Africa Development Community (SADC), Namibia realised the importance of transboundary cooperation (as was pointed out in the section on

the NBSAP), since many genetic resources and the knowledge of local communities transcended borders.

Namibia's approach to biotrade and bioprospecting could be summarised as being underpinned by the following characteristics: it encouraged and facilitated bio-prospecting so that benefits could be created and shared amongst the respective stakeholders; it recognised as essential the pro-active promotion of opportunities to suitable and reputable research partners; and, it also generated the understanding that a clear way to "do the right thing" created disincentives for bio-piracy while at the same time creating an environment in which compliance had less transaction costs compared to biopiracy. Having a national approach in place served as a signal that provided "legal certainty" to users. Finally, the approached cemented the principle amongst the players that there should be "No publication without consultation" (Du Plessis and Becherer, 2008 p. 7).

The aims of Namibia's approach over the years could then be summarized as:

- Pro-actively assert national sovereign ownership and control
- Enforce respect for traditional knowledge when it is accessed
- Lower transaction costs for users
- Use law of contract to provide certainty
- Encourage partners who have resources
- Show that Namibia understands and respects intellectual property rights
- Work towards putting in place the administrative, policy and legal framework
- Provide the necessary political will and support to the Namibian ABS negotiators
- Provide institutional support to the IBPC Secretariat

The above all contributed towards a concerted integrated approach to ABS in Namibia by involving all stakeholders and facilitating Namibia's cutting edge approach and status in the ABS arena regionally and internationally.

8.3.6 Assessing the Effectiveness of Namibia's ABS Legal Framework

As the aim of this study was to assess the effectiveness of Namibia's approach in terms of implementation, the literature was reviewed for any work that could serve to assess or provide an objective view in terms of how Namibia dealt with the critical factors. The findings from the literature were further supplemented by face-to-face interviews.

Krugman and Katjirua (2007 p. 8) assessed the legal, policy, institutional, and commercial dimensions of ABS issues and options of relevance for Namibia by examining how international

ABS commitments and arrangements were implemented at the national level. This was done by reviewing relevant (ABS-focused or ABS-related) national policies and legislation and considering their implementation in Namibia, and by analyzing illustrative cases of agreements between local, national and international partners (users and providers of particular biological resources) governing the collection, research and/or commercial utilization of these biological resources.

The case study by Krugmann and Katjirua (2007 p. 8) also identified and examined the challenges and opportunities in Namibia (associated with ABS policies and legislation and with ABS agreements underpinning bio-trade and bio-prospecting) for the generation of economic benefits, equitable benefit-sharing, biodiversity conservation, sustainable development from the use of biological resources, and other relevant objectives. Based on the available accumulated experience at the time of assessment, the case study drew conclusions and best practices for Namibia in terms of enhancing the effectiveness of ABS policies, legislation and agreements in Namibia.

In their assessment, Krugman and Katjirua (2007 p. 16) found that Namibia had in place, or under development, various other policies and laws containing ABS-related provisions or otherwise influencing ABS issues and options. These included: overarching environmental framework legislation, policies and laws for key natural resource sectors (forestry, wildlife, agriculture and fisheries), policies and legislation governing land access, tenure and use, legislation protection of intellectual property rights (IPRs) as well as policies and laws governing the decentralization of political and administrative decision-making processes and the devolution of management authority over natural resources.

In recent years and (in some cases) decades Namibian rural producers, middlemen and exporters were engaged in international bio-trade. As participants in this trade, they supplied international markets with biological raw materials or semi-processed natural products. These were used by global industries as inputs into different commercial products in sectors such as herbal medicines, personal care and cosmetics products, and food and beverage products or supplements (nutraceuticals). In so doing, they shared (divided up) benefits from trade with international actors (processors, manufacturers, wholesale and retail outlets) out of the total value margin available in the supply chain for any particular biological raw material or semi-processed natural product (Krugman and Katjirua, 2007 p. 20).

The review found some institutional and administrative inefficiency in terms of how the ABS policy and legislation process moved from drafting to implementation. The process took time and it appeared that not all actors were contributing fully towards successful implementation.

This was especially observed amongst the government or public sector stakeholders. The private sector also seemed to not have been featuring very well in the ABS policy arena.

Cole and Nakamhela (2008) carried out an extensive review of the efficiency of the Namibian permitting system in order to find ways of strengthening it and to facilitate lower transaction costs for permit procedures of basic and commercial research. Their assessment found that some institutional inefficiencies still existed as well as a general lack of coordination and communication amongst the different public sector stakeholders with a mandate for issuing research permits, which significantly increased transaction costs in the sector.

Namibia participated in a three country Capacity Building for Biotrade Project (CBBT) - an initiative spearheaded by the United Nations Environment Programme (UNEP), and supported by the German Agency for Technical Cooperation (GIZ). The other two participating countries were Nepal and Peru. The project aimed to build national capacities in order to promote the sustainable use and trade of biodiversity-based products, otherwise known as bioTrade (UNEP, 2012 p. 1). A sectoral study positively assessed how Namibia addressed its biotrade issues within this project. According to UNEP (2012 p. 26), those key areas in which Namibia required further efforts in respect to ABS implementation and to facilitate the move towards a green economy were:

- Harmonization of policies, particularly in terms of on-the-ground implementation
- Investment in engaging the private sector (engagement of the private sector would be essential for further development of ABS implementation infrastructure as this would require sustained investment over the coming years.)
- Infrastructure investments and reforms
- Awareness raising and information dissemination
- Research and development.

In conclusion, the UNEP (2012 p. 27) report suggested that a dedicated programme of research and development that examined markets, new product development, possible innovative ownership and financingwould be essential and had to be embedded in a true understanding of the value of biodiversity and the ecosystem services on which it relied.

The literature review generally described a positive trend in the evolution of the ABS dialogue in Namibia. It illustrated that Namibia, over the past years, had a strategy in place, that actively engaged the ABS policy arena both regionally and internationally, and took well thought-through decisions based on internal reflection as to the way forward with regard to ABS

implementation. It also highlighted the challenges facing a young[31] developing country in dealing with a complex issue such as ABS.

The literature review did not reveal any prior analysis of the ABS policy arena from the perspective of the critical factors under investigation in this study.

8.4 METHODOLOGY

8.4.1 Introduction

This country case study was based largely on face-to-face interviews and a review of the available literature. Description and analysis of ABS (related) legislation, policies, strategies and contractual arrangements and associated administrative and institutional mechanisms, arrangements and frameworks, were based on data and information gathered from the available literature and interviews with national stakeholders and key informants.

8.4.2 Literature review

Both primary literature (legal acts, official policies, regulations, guidelines, workshop proceedings amongst others) and secondary literature (analytical, synthetic and/or interpretive technical reports, articles, opinion pieces amongst others) were accessed and reviewed.

8.4.3 Interviews

Face-to-face interviews were carried out with expert and non-expert persons on ABS in Namibia. The interview consisted of open-ended and structured questions given to the interviewees. All interviews were held in a semi-structured open-ended manner, based on a list of major questions and issues to be covered. This was done in order to keep the discussion informal and flexible and to allow for the interviewees to feel at ease to respond, and to volunteer relevant incidental information, raise new questions, issues and challenges, and help explore selected issues in greater depth. These consultations with stakeholders served not only to gather information but also to cross-check, confirm and pre-validate relevant information, preliminary findings and still tentative conclusions.

Overall a significant effort was made to identify, contact, mobilize and interview a reasonably large and representative cross-section of national stakeholders.

Table 8.2 below highlights the different categories of stakeholders that were consulted during this study.

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[31] Namibia gained her independence in 1990 and thus could be considered a relatively young democracy.

Table 8.2: Categorization and description of stakeholders that took part in the study

CATEGORY OF STAKEHOLDERS	DESCRIPTION OF STAKEHOLDERS	NUMBER OF STAKEHOLDERS
Academia and Research	This category consisted of stakeholders active in research and academia such as from the university and other research institutions in Namibia	4
Government	This group represented the interest of government and comprised of respondents from various government agencies, offices and ministries.	7
Local communities	These groups consist of local community members from Namibia actively involved in the ABS policy arena	3
Civil Society	This category represented the Non-Governmental Organizations stakeholders involved in the ABS policy arena	8
Private Sector	This category represented respondents from the private sector actively involved in the ABS policy arena. It also included consultants active in the ABS policy arena	3

8.4.4 Structure and Approach Used For the Exploration of the Critical Factors

As a young democracy which gained its independence in 1990, the relatively new systems in Namibia were amenable to the development of a structure, within the critical factors, from the beginnings of ABS until 2012, a time span of 22 years. Here an overview of how Namibia has dealtwith the complex issue of ABS policy and legislation and concrete actions taken to implement these during that that time. To facilitate ease of reference and assessment, four timeframes were developed. The critical factors were considered and gathered into two groups. The groups were developed based on which two were most related and relevant to each other and which time frame was the most relevant to the assessment, based on these two grouped critical factors.

Table 8.3 below provides a summary of the time frames, groupings and the rationale for using the particular grouping for that specific time frame. Together, the various phases were used to assess Namibia's effectiveness in dealing with ABS through the lens of the critical factors.

Table 8.3 Summary of Time Frames, Groupings of Critical Factors per Time Frame and Rationale for Approach

TIME FRAME EXPLORED	CRITICAL FACTOR (CF)	DESCRIPTION OF CF AND RATIONALE FOR ASSESSMENT FOR THAT PARTICULAR PHASE
PHASE 1: 1990 -1995 *The beginnings of the ABS policy dialogue in Namibia*	Good governance structure in both provider and user countries	Good Governance within the context of this study means that Namibia as a provider country (provider of genetic resources) has put in place legislative and policy measures to ensure that stakeholders have incentives to participate in the ABS market place thus leading to the generation of benefits (Monetary and otherwise) for both Namibia and the user country.
	Assigning property rights and intellectual property rights	This refers to how property rights are assigned in Namibia's domestic legislation in terms of who owns the genetic resources and how this ownership right enables that person/s to use, sell, transfer or exchange genetic resources and/or exclude others from doing these things. The assignment of Intellectual Property Rights (IPR) refers to how IPR is assigned in Namibias' domestic legislation in the context of ABS. The questions is what are the rights given to persons in the R&D process as well as to their traditional knowledge. Is it clear who owns knowledge e.g. traditional knowledge? It was decided to assign the assessment of these two critical factors to the period at the onset of independence. Since this is the phase were Namibia under its own independent government started the process of policy and law making which set the scene and frame for all activities further on.
PHASE 2: 1995 – 2000 *Experience on ABS five years after independence and the beginning of the ABD dialogue*	Effective, functional and non-complex administrative structure/framework is in place	The central focus of this part is to assess how the legal framework that was put in place at independence is applied in practice. How easy is it for a researcher/investor/user to understand and apply for an access agreement for Research & Development in bio-prospecting in Namibia? This also includes the transaction costs that the researcher/investor/ user have to incure. In other words, are the procedures too bureaucratic, cumbersome and complicated or not and does one have to incur significant costs just to get a research permit? Do you get your research permit within the time that it is stipulated? In other words, how complex and bureaucratic are the laws and policies in Namibia in terms of practical implementation and what are the lessons learned***?***
	Addressing or accounting for time lags to the generation and sharing of benefits	In this context, time lags refer to the fact that in the ABS sector generation of benefits may take a long time to realize.The assumption here is that if the time lag between the collection and provision of samples and the development of a marketable product is accounted for by adequate and appropriate benefits flowing to Namibia as

		a provider country this will indicate the effectiveness of Namibia's ability to regulate or deal with ABS. In other words, how long does it take from the collection of materials to the generation of the first benefits and how do we deal with this to manage expectations and to ensure that maximum benefits (Monetary and non-monetary) accrue to Namibia? These two critical factors were assigned to assess Namibia five years after independence on the rationale that in the first phase laws and policies were put in place and in this phase Namibians have started to gain experience in navigating through the practical application and implementations of these laws and will also have realized that for ABS the generation of benefits take time.
PHASE 3: 2000 - 2005 *Informed decisions on ABS and its market 15 (i.e. collectively from 1990 – 2005) years after independence*	Efficient understanding of the ABS market structure within which the transaction must take place	In this context, efficient understanding of the market structure means that all relevant stakeholders especially the regulators, private sector, researchers, and local communities understand the characteristics and dynamics of the ABS market. This includes the demand and supply forces in the bio-prospecting and bio-trade market that prevail in Namibia. It also assumes that if there is a good understanding of the market then there will be a well-functioning market for genetic resources within Namibia as a provider country or at least a vibrant ABS market. In other words, do Namibians in the ABS sector really understand how the ABS market works? What is the Namibian experience with the ABS market and what are the lessons learned?
	Presence of an effective and functional biodiversity valorization strategy at national level	In this context, the valorization of biodiversity refers to the development of valorization strategies at the national level especially in provider countries that can help add value to their biodiversity as it goes up the value chain within the country and to the market. In other words, do Namibians know the value of their genetic resources? If not, what do we need to have in place that can help us add more value to our resources so that we do not only provide raw materials, but that we add value and thus enabling Namibia to negotiate more benefits - benefits that can serve as an incentive for conservation as well as turn Namibia into a user country of its own genetic resources and that of others. The rationale for assigning these two critical factors to this timeframe is that it takes time to create a market and to understand that market also needs time. This period covers fifteen (15) years after independence and, therefore, assumes that Namibians now have sufficient experience regarding ABS and the ABS market. It further assumes that Namibia would have understood the need

		for a national value addition strategy as part of using its own biodiversity for economic development.
PHASE 4: 2005 – 2012 *Current state of Affair with ABS*	Effective measures to address information asymmetry in the ABS implementation framework are in place	Information assymetry in this context refers to the imbalance of power in negotiations and transactions of ABS agreements because one party has more, or better information, than the other. This imbalance can result in the transaction being influenced negatively and can result in the contract or agreement not being entered into or that a non-optimal agreement is reached for one of the parties especially the one with less information. The problem of uncertain product quality in the market for traditional knowledge-related information and tangible genetic resources where the quality of genetic resources samples or the reliability of the traditional knowledge-based information or both can only be verified after the good has been traded, leads to problems of information asymmetries and in extreme cases, to a breakdown of market exchange. Therefore - what needs to be in place in Namibia to deal with these imbalances of power and how has the country dealt with this issue over the years to ensure that agreements are reached and benefits flow within the ABS market?
	Presence of effective and efficient measures to build trust (social capital) amongst stakeholders.	In this context, social capital refers to the presence of networks and connections within the ABS market. It also includes the presence of relations of trust and mutual support, formal and informal groups, common rules and sanctions, collective representation, mechanisms for participation in decision-making and the presence of effective leadership within the ABS sector in Namibia. Heavy focus was placed on the need to build trust (social capital) between and amongst the players in the ABS sector within Namibia and internationally. ABS transactions are long-term contractual relations between academia, government, and private sector both within and outside Namibia and for these relationships to last trust building is necessary. How did Namibia deal with the issue of building trust through its various processes over the years in order to have a vibrant ABS market? These two indicators were chosen to complete the assessment of Namibia from the perspective of the critical factors. These critical factors have bearings on all the phases since independence and, therefore, provides a useful way to engender a reflection of Namibia from independence till twenty-two years after independence in terms of dealing with ABS at the national level.

8.5 RESULTS

8.5.1 Introduction

The questions from the questionnaires were analyzed to identify the common line or components relevant to the critical factor that pertained to them. The results of this analysis were presented in the results and discussions section reflecting the key responses from the interviews. Respondents were grouped into the following categories: Research and Academia representatives, Local Communities representatives, Government or Public Sector representatives, Civil Society representatives and Private Sector Representatives.

The results are structured according to the various phases and stakeholders. Interviewees were asked what they thought the lessons learnt were for specific aspects of the critical factors. These are also presented at the relevant sections in the results. There are no interpretative sections within the results section as they represent simply the results as they came from the interviews.

Since anonymity was a key feature of the interviews to allow for open, frank and critical presentations of the issues, this is also maintained in the presentation of the results.

8.5.2 Results for Phase 1

The results for phase 1 are reflected below in Table 8.4

Table 8.4: Results for Phase 1 (1990 – 1995)

STAKEHOLDER CATEGORY	**CRITICAL FACTORS CONSIDERED FOR THIS PHASE (1990-1995)**		
	Good governance	***Assigning property and IPR***	***Lessons learned***
ACADEMIA AND RESEARCH	Necessary legal framework has been set. Structures and institutions put in place assures good governance and create a conducive environment that attracts investors and reduces bio-piracy and can facilitate ABS.	All genetic resources owned by the State. Traditional Knowledge owned by the community or holders of TK. Internal migration may pose a challenge to the transfer and transmission of TK inter-generationally this has implications for ABS.	Good governance structures and clear assignment of property rights and IPR create a friendly environment that attracts investors and assures that benefits are managed properly for beneficiaries not to be jilted in the process. Good governance helps reduce bio-piracy.

GOVERNMENT	Emergence of Rio Conventions gave impetus to legal framework in Namibia. Period dedicated to putting in place legislation to address colonial inequalities and access to economic resources and not per se to ABS. Natural resources given a focused economic value through policy and legislation which set the stage for ABS. Good governance structures are in place complemented by strong independent judiciary and relatively unambiguous laws. Legal certainty and security is assured which is viewed important for ABS.	No appropriate IPR legal instrument that provides for Indigenous Knowledge Systems. All genetic resources vested in the State, communities own their own TK.	Application of Good governance systems are as good as the quality of human capital. Good Governance assures accountability, transparency and better delivery of services and goods to public. Poor application of cross-sector collaboration which has implications on ABS implementation. Good governance has allowed for communities to benefit and utilize natural resources in Namibia. Needs systems that assigns clear responsibilities, are held accountable and responsive to the majority of the people if ABS implementation is to be effective and functional.

LOCAL COMMUNITIES	Period dedicated to lawmaking and putting in place the necessary legal and policy framework to pave the way for implementation of national development goals. It sets the stage for work on ABS. Main focus is on protecting biodiversity, this triggers excellent research on biodiversity conservation and use which has implications for ABS. The establishment for the NBP in 1994 set the stage for concrete ABS work. Biotrade work led by civil society becomes the precursor for ABS work. The first large scale sale of Marula kernels for ABS work takes place in 1995. Devils claw sustainable harvesting programme begins in 1995.	Respondents state that ownership of resources is vague, due to uncertainty created by the previous colonial government; however many feel that the new government has brought in advocacy for ownership of resources through the legislation developed. According to this category the issue of traditional knowledge is still not resolved.	Openness by all stakeholders to engage and work towards a common goal is important. Importance of capacity building at all levels. Working together, acceptance of other stakeholders and minimizing mistrust is good for building good governance. For good governance of ABS, management must be at the local level as much as possible, authority and responsibility translate into accountability which then will translate into good governance.

CIVIL SOCIETY	The necessary legal and policy framework is put in place during this phase which is an important prerequisite for ABS good governance. Legislation confers rights to local communities to own or use forests and wildlife. This is a recognition of their right to use and trade in plant and animal genetic resources which is important for ABS. Ratification of the CBD laid down the principles for benefit-sharing and for ABS work. Good governance in general is prevalent in Namibia and fosters engagement by the private sector to engage in transactions and investments in the country.	All rights to genetic resources are vested in the State. Traditional knowledge is a challenge in terms of defining ownership. Many of companies and firms have not focussed on ABS.	There is good governance to a large extent but more is needed to facilitate for building local capacity to add value to products and to develop external trade policies and legislation that create incentives for foreign investors to add more value to local products which creates a better platform for benefit-sharing.

PRIVATE SECTOR	The necessary legal and policy framework is put in place during this phase which is an important prerequisite for ABS good governance. Legislation confers rights to local communities to own or use forests and wildlife This is in recognition of their right to use and trade in plant and animal genetic resources which is important for ABS. Ratification of the CBD laid down the principles for benefit-sharing and for ABS work. Good governance in general is prevalent in Namibia and fosters engagement by the private sector to engage in transactions and investments in the country.	All rights to genetic resources are vested in the State. Traditional knowledge is a challenge in terms of defining ownership. Many of companies and firms do not focus on ABS.	There is good governance to a large extent but more is needed to facilitate the building of local capacity to add value to products and to develop external trade policies and legislation that create incentives for foreign investors to add more value. This can create a better platform for benefit-sharing.

8.5.3 Results for Phase 2 (1995 – 2000)

The results for this phase are reflected in Table 8.5 below

Table 8.5: Results for Phase 2

STAKEHOLDER CATEGORY	**CRITICAL FACTOR CONSIDERED IN THIS PHASE (1995 -2000)**			
	ADMINISTRATIVE STRUCTURES AND BUREAUCRATIC PROCEDURES	**TIME LAGS TO BENEFIT SHARING**		
	Administrative Efficiency	***Institutional Efficiency***	***Insights on benefit-sharing and time it takes to generate benefits***	***Insights on management of expectation of benefits***
RESEARCH AND ACADEMIA	Respondents consider administrative efficiency for ABS in Namibia as overall satisfactory.	Respondents maintain that overlapping mandates and responsibilities of institutions hinder efficiency.	Respondents seem to not have much experience with the issue of benefit-sharing and the time required to generate benefits.	Some respondents argue that there is a need for a thorough understanding of the range of benefits and their implications for stakeholders.
GOVERNMENT	Divergence of views amongst respondents on administrative efficiency in Namibia, a view linked to the complexity of issues, necessary lack of knowledge and baselines, human capital and experience.	Institutions tried their best in terms of efficiency. A significant brain drain from the public sector to the	Need to manage expectations. Need to unpack the benefits. Need to have patience and a long	Need to build capacity on negotiation skills and capacity of stakeholders to ensure benefits accruing from ABS are generated and shared. Innovative partnerships among sectors and institutions are necessary for ABS benefits to flow.

	Need to remove needless bureaucracy and identify loopholes and gray areas in legislation. Identify gaps and deal with them. Private sector will not improve and monitor itself regarding ABS. Government is needed for that. Lack of clarity on how ABS applications are analyzed which monitoring systems are in place and implementation is not coordinated and harmonized.	civil and private sector creates a challenge for institutional memory. Administrative rules are faced by inefficiencies posing a challenge to institutional efficiencies. ABS competent authority may not have necessary inertia to move the issue. Lack of coordination and harmonization thus impacting on institutional efficiency for ABS.	term outlook regarding benefits. Need for recognizing, reflecting and meeting obligations. Benefits accrue from investment, hard work, responsibility, adaptive management, responsiveness to early conflict resolution and understanding of the resource market.	
LOCAL COMMUNITY	General view is that there is a lack of administrative efficiency. Lack of human capacity to enforce policy and legislative framework hampers effective ABS implementation.	Lack of institutional structures at grassroots and capacity constraints.	No good lessons learned. People waited for benefits and if benefits don't come	Care should be taken not to raise expectations. Need to be frank, honest about the barriers and challenges that will be faced in generating benefits from ABS. Donor funding is essential to help manage expectations.

		Mandates and responsibilities are not clear.	people go back to their ways. The issue of time lags to benefits and its implications on benefit sharing was not made clear to communities.	
CIVIL SOCIETY	Lack of administrative efficiency. Hampered by conflict between politicians, bureaucrats and other stakeholders *viz* a *viz* implementation and perceptions of the realities on the ground. Scientist respond to politics and not to science which complicates ABS implementation.	Institutions for ABS are not having the necessary, budget, human capital and technical resources. There was a general good will to learn and understand the rules. Political will and commitment for ABS was there. A working group was established in 1995, the efficiency of this group was	Benefits should not become the end in themselves. There is a need to unpack and understand the range of benefits and responds appropriately. Good governance promotes ownership which facilitate for effective deals and transactions that eventually leads to benefits. It is important to recognize that benefits take time.	Expectations must be managed. Recognized the role of donors in assisting to manage expectations whilst ventures are maturing and benefits to be shared are generated. Assets generated are capacity training, social networks taking into account socio-cultural aspects which was a necessary foundation for larger investments to be absorbed in later phases.

		hampered by institutional challenges.		
PRIVATE SECTOR	Legislation on its own does not necessarily lead to administrative efficiency. It needs to create incentives for participation and the enabling framework for transactions to occur as well as provide disincentives for illegal actions. General administrative efficiency is maintained	Lack of institutional efficiency. This hampers ABS implementation. Despite these efficiency the private sector knew who to approach even if all the legislation and regulations were not in place and still get what they needed without corruption	Divergence of views on whether any lessons have been learned, generally there is agreement that it takes time to generate benefits, if communities are provided with rights and responsibilities benefits can flow. Support programs for ABS benefit generation must be long term and sustained before sustainability can be achieved.	The most important lesson is not to "over-sell" benefits as this creates expectations amongst stakeholders.

8.5.4 Results For Phase 3 (2000 – 2005)

Table 8.6 below provides the results obtained for this phase.

Table 8.6: Results for Phase 3

STAKEHOLDER CATEGORY	CRITICAL FACTOR CONSIDERED IN THIS PHASE (2000 -2005)			
	MARKET STRUCTURE OF ABS		VALORISATION OF ABS	
	Understanding the Market Structure oOf Abs in Namibia	***The Role of Technology Transfer in ABS Implementation***	***The Role of Value Addition to Biodiversity in Namibia and ABS***	***Role of the Private Sector***
RESEARCH AND ACADEMIA	Lack of capacities hampers full understanding. Only a few Namibians have the necessary understanding of the ABS market.	Technology Transfer is crucial for value addition, continued capacity development and for monitoring for compliance using modern tools. Ongoing new discoveries and new challenges are emerging in the field of ABS and technology transfer make it important to stay abreast.	Greater need to develop capacity to engage in valorization of biodiversity in Namibia in the interest of ABS. Namibia trading only in raw resources or partially processed material and is therefore not yet a significant user of its own biodiversity. Need for focused investment in valorization of natural resources. No significant human capital investment has been made.	There is need to engage the private sector more. Private sector can take the lead but cannot do it alone without other players in a win-win engagement. The role of the private sector in ABS is the development of industrial scale products, quality assurance and market development. Other stakeholders can do research and development as well as production of prototype products.
GOVERNMENT	Divergent views. Most believe that the ABS market and	Technology transfer without the human capital investment is doomed to failure.	General view is that this issue has not been dealt with effectively.	Divergence of views on the role of the private sector from no role to a significant role.

	Namibia's potential place in that market is not clear at all. Some believe that the markets are generally dominated by outsiders leaving locals feeling left out of the loop. Experts such as economist, and trade specialist and finance specialist have not been involved in the ABS debate. Namibia does not have the institutions and the administrative experience to effectively regulate the sector.	The ABS sector should keep this in mind as it is crucial for success in ABS till now tech transfer and its potential has not been adequately exploited. Technology transfer will reduce the cost of research and development for ABS and will facilitate for capacity building.	The approach is labelled as haphazard and fragmented without proper coordination and harmonization. A national strategy is required. There is need for a human resource especially a reliable supply of trained specialists and technicians.	Private sector is often over looked or their role is underplayed by the authorities in Namibia. Mindset seem to have been to keep control even over research, within public sector institutions and not to allow the private sector in. Risk takers in the private sector must be rewarded.
LOCAL COMMUNITIES	The general view is that there is no clear understanding of the ABS market.	Technology transfer is viewed as essential by this group of stakeholders. Capacity building must accompany technology transfer.	Very little value addition has been done resulting in significant opportunities being lost by the country Namibia remained a provider of raw materials	The role of the private sector in ABS is critical, however the government is not fully acknowledging the role of the private sector. There is a need to involve the private sector strategically, administrative measures, policies

	This can be a result of having no critical mass of enough hands on experience		Effective ABS implementation requires that a strategy be put in place.	and laws that prohibits meaningful interactions between the two sectors needs to be revised to remove the blockages and facilitate for meaningful interaction.
CIVIL SOCIETY	Most respondents doubt whether Namibia understands the ABS market. There is an emergence of some understanding however perceptions and expectations still exist and are not addressed in a coordinated manner.	Respondents view technology transfer as crucial if ABS implementation is to be effective. Capacity building is important and needs to be considered together with technology transfer.	Not much has been done in terms of biodiversity valuation. There is no national strategy for value addition.	Most respondents are of the view that there is a general suspicion towards the private sector. There is a perception that they are ripping off everyone. Private sector is viewed as important and integral to the success of effective ABS implementation Need for smart partnerships.
PRIVATE SECTOR	Lack of understanding of the ABS market. Respondents feel that government's understanding of the needs of the private sector is inadequate.	Technology transfer is a crucial aspect of value added processing of genetic and any other resource. Government should call for it in its investment policies, legislation and during international negotiations. Government must invest in local capacity in analysis and processing of products	Namibia has not done well, this is an important issue for ABS. Value addition is hampered by the low capacity in Namibian institutions.	The role of the private sector is obvious i.e. bringing in private capital for commercial processing and international marketing. Currently civil society is leading research in ABS and not the private sector.

8.5.5 Results for Phase 4 (2005 -2012)

The results for this phase are provided in Table 8.7 below.

Table 8.7: Results for Phase 4

STAKEHOLDER CATEGORY	**CRITICAL FACTOR CONSIDERED IN THIS PHASE (2005-2012)**			
	INFORMATION ASYMMETRY		**SOCIAL CAPITAL**	
	Misrepresentation of The Value of TK And Usage of TK by Firms	***Measures to Address Information Asymmetry and Insights Gained***	***Does Namibia Have Trust from Stakeholders Internationally and Nationally?***	***Is Social Capital Important in ABS Implementation?***
RESEARCH AND ACADEMIA	Respondents view this as a complex issue. Some firms operate fairly and others not. Communities need to be capacitated on the value of their TK and the resources as well The true economic value of TK and GR is however difficult to assess. Generally respondants are of the view that information asymmetry is prevalent in the ABS sector.	Awareness creation on the value of biodiversity is the first step. Followed by capacity development at various levels and on various aspects of ABS. There is a lack of young Namibian professionals who have in-depth knowledge and understanding of Namibian biodiversity.	Developing trust ensures that partners do not exploit each other. It also facilitates for the ease in transactions. Respondents maintain that Namibia has gained trust from other stakeholders both within and outside Namibia Trust building can still be strengthened.	Trust is crucial for ABS implementation all levels. It is a spin-off of benefit sharing and sustainable use of resources. There is a need for a broad based approach to take stock of all resources that are available and then consider proper valorization and monitoring strategies for compliance under a legal framework.

GOVERNMENT	From critical self-inquiry and rising above the background rhetoric respondents maintain misrepresentation from NGO's, environmental activists, uninformed officials and public media who have increased misinformation and raised unrealistic expectations regarding ABS and its potential benefits. Those implementing ABS themselves do not have full understanding for its value and misrepresent the potential value to communities, thus creating unrealistic expectations of the value. Communities have overrated perceptions regarding the value, uniqueness, and rarity of their TK and proclaim the injustices done to them.	Measures are in place but implementation is lacking due to capacity constraints (legal and technical expertise), inexperience, but also due to lack of resources, especially adequate financial resources. There is a lack of intra and cross-sectoral consultation and coordination. It is proposed that a national database of information be established. The in-country attempts to address asymmetry have been weak. There is a lack of information flow, updating, explaining and review of it, even between national level stakeholders involved in the process of developing ABS, not to mention between these stakeholders and communities, traditional leaders, private sector etc. Civil society in Namibia is viewed as an honest broker and is facilitated to address information asymmetries.	A divergence of views is demonstrated on whether trust is important for ABS implementation. Some consider it critical and crucial whereas others believe that what is needed is simply political will and commitment, good national legislation supported by clear procedures and close monitoring (compliance with) of any agreements. Trust is at the heart of full disclosure and fair negotiations. So is transparency and administrative efficiency. Namibia enjoys trust both within and outside of her borders.	Some respondants argue that trust can contribute to but ASB implementation cannot rely solely on trust. Irrespective of trust there must be clear, logical procedures for access as well as benefits. There is need for intra-sector and cross-sectoral coordination, consultation and harmonization. ABS must be viewed as an issue that needs to be mainstreamed, where relevant, in policy development and national development planning in Namibia and not only confined to those initiatives in the Ministry of Environment

		ABS is much more complex than was apparent at the beginning		
LOCAL COMMUNITIES	Respondents all believe that there is misrepresentation of the value of the end product and the usage of TK by firms. The "culprits" are the middleman and the intermediaries.	Information sharing and communication is viewed as an important measure to address information asymmetry	Trust is generally viewed as important by these stakeholders. They maintain that there is a huge gap in trust in the ABS sector. The owners of TK don't trust the users of TK. There is trust from outside, however, within Namibia there are serious trust issues due to a multiplicity of issues ranging from politics, capacities and information asymmetries.	Trust is viewed as important for ABS implementation. There is, however, a need to critically review the social role of ABS for communities. Government has the main responsibility of fostering trust among the different stakeholders, this may be hampered by political affiliation imperatives especially at the local level. It is, therefore, important to put in place measures to address lack of understanding of the important issues in the ABS sector and lack of trust amongst the key players and at the same time increase transparency.
CIVIL SOCIETY	Respondents are of the opinion that it is possible to have misrepresentation of the value of TK and resources since firms are seeking to minimize costs and maximize profits. In the absence of proper guidelines, procedures etc. and lack of information and skills as well as a fragmented approach to ABS policy this issue will remain a challenge.	Respondents generally believe that measures were put in place though recognizing that it has been a difficult issue. The measures have been poorly implemented in a non-focused, non-harmonized and non-coordinated manner. Information is needed to makes ABS work. H however the most strategic information is not readily available and accessible from the industry.	Internationally Namibia generally enjoys trust however the delay in enacting and getting proper ABS structures in place has not contributed to trust building. There is a general good will towards trust building amongst Namibians, there is room for improvement and this will be critical for ABS implementation.	Respondents agree that trust is important for ABS implementation. Some respondents however express concern on how politics many influence ABS implementation and that this has potential for affecting trust building significantly. There is need to build the necessary capacity at all levels as this will engender trust as people become competent due to capacity.

		It is a small number of people who know and a large number of people who don't know much about ABS for effectiveness of ABS. This must be changed.		
PRIVATE SECTOR	Respondents argue that it may be the case that this happens, however there are also cases when industry simply does not know the real value until many years later when the product is in the market	Respondents maintained that experiences made by civil society such as CRIAA SA-DC, the IPTT and PhytoTrade Africa has to some extends been measures to address information asymmetry.	All respondents argued that trust is very important. This sector maintain that Namibia enjoys trust nationally and internationally which provides a good basis from which to move forward. What is needed is forward-looking legislation and regulation, and a coordinated national process to capitalize on goodwill. Namibia's policies and legislation has earned respect abroad but Namibia needs to do more on capacity and policy incentives.	Trust is important and crucial for ABS implementation. Respondents feel that building social capital also requires reducing information asymmetry between partners and the need for working together for the same objectives- local empowerment, conservation and sustainable utilization, inward investment, value adding, technology access, markets and growth as all these creates capital to be used for national development.

The interviews generated a substantial amount of data and results, Attempts were, therefore, made to extract the most useful results relevant to the research questions and objectives of the study.

8.6 DISCUSSION

To set the stage for this part of the study the following section describes the structure of the discussion framework. The discussion of the results is presented in three sections. The first section explains the findings and interpretation of the results from the interviews, stakeholder by stakeholders. This is then followed by a discussion of the key issues that arose for each of the critical factors in terms of the effectiveness of ABS implementation in Namibia.

This section concludes with an analysis of the results based on the indicators derived from the global survey on ABS. References are brought in for both sections to situate the findings in the existing body of knowledge surrounding ABS implementation in Namibia.

The next section deals with the internal and external factors that may impact the assessment of Namibia by the critical factors. This is then followed by the last section which consists of a discussion aimed at putting it all into perspective. The final part contains the conclusions of this study.

8.6.1 DISCUSSION OF RESULTS ON THE OVERALL RESPONSES BY THE VARIOUS STAKEHOLDER CATEGORIES

8.6.1.1 Research and Academia Stakeholders

As was pointed out, especially by government sector representatives, a wide variety of biophysical research on Namibia is available. Namibia has a well maintained historic wealth of environmental information. Funding for maintaining and expanding this wealth is limited, however, e.g. the State Museum is not keeping up with environmental information needs. Key gaps in this sector include limited interactions among scientists and institutions (e.g. government ministries and research agencies amongst others) and narrow disciplinary research and training efforts.

The same was also found by Seeley and Montgomery (2009). The results seem to indicate a lack of adequate communication from this sector about their activities. In addition, no major strategic alliances are being built that could lead to the development of appropriate and relevant capacities for the needs of industry or specifically the ABS sector. Moreover, there seems to be a suspicion towards this sector, particularly from the government sector regarding misrepresentation of research results and the value of genetic resources. Indeed, this sector, it is hinted, are viewed as the main “culprits” of biopiracy in Namibia. Seely and Montgomery (2009 p. 9) also found that inadequate communication of research results with

communities and with policy makers, has led to poor understanding of the value of research results amongst both communities and policy makers and of its application potential in Namibia.

In this regard, the research and academia sectors seems to behave exactly like the government sector in terms of inefficient cross-sectoral communication. This has serious implications for ABS implementation. For instance, civil society seems to be expected to then fill this gap, so that research for ABS then becomes fueled and driven by civil society with limited assistance from the research and academia sector.

There is also generally a lack of investment towards the necessary infrastructure and as was pointed out by some government respondents, sometimes even when government facilitates the acquiring of new research equipment for the research and academia institutions, such equipment is then not maintained and there is a lack of capacity to use it adequately and effectively.

This has serious implications for effective implementation of ABS in Namibia as well as for the issue of technology transfer as a mechanism for benefit-sharing. Most of the surveys carried out in Namibia have not given due reflection to this issue nor explored it extensively – especially with regard to its role in overall economic development and value addition as opposed to simple training for imparting scientific knowledge. Some of the constraints faced by this sector in Namibia include the heavy teaching load, leaving no time for real basic research. This is coupled with perceived and sometimes lengthy bureaucratic procedures required for research permits and funding.

It is important to note that the concern expressed by some within the government sector in relation to accusations of biopiracy may result from misinformation about the necessary protocols, especially those among the research and academia sector who engage in collection, ethno-botanical research and collaboration with other external research partners.

8.6.1.2 Government Stakeholders

There are undertones in the results indicating that many of the obstacles towards effective ABS implementation originate from inefficiencies amongst key government personnel and institutions. At the same time, the results seem to indicate that the Namibian government plays an active role in promoting biotrade as a means to advance national goals and initiatives within the larger framework of national development plans, strategies and action plans. This indicates a political will and commitment, especially from the political decision-makers. For example, the Office of the President was involved in advocating for biotrade and the Ministry of Environment and Tourism has been spearheading work on Biotrade and ABS

in Namibia. Government has promoted the creation of multi-sectoral platforms such as the Namibian National Biodiversity Programme, and notably the Indigenous Plants Task Team (IPTT) in 2000, as well as the interim Bioprospecting Committee in 2007, both of which have been central to ABS implementation in Namibia.

The results seem to indicate that on-the-ground implementation of some aspects of ABS and biotrade has been occurring, whereas barriers seem to be found especially at the national level. Seely and Montgomery (2009 p. 38) point out that cooperation, networking and the sharing of resources amongst stakeholders, is most pronounced at regional/local level with a focus on community involvement. Little cooperation among ministries at the national level was reported in the study. Therefore enhanced capacity for environmental management that could be gained by networking and cooperation was not realized. The results of this study reinforces this finding.

8.6.1.3 Local Communities Stakeholders

The results indicated that the local communities in Namibia had, to some extent, gained some insights about ABS. Many had been involved as primary producers especially for Devil's Claw, Hoodia, Marula and Kalahari Melon seeds.

Expectations for benefits to be created and shared were raised, especially amongst this sector and to some extent it seemed to have been managed. The results also showed that there has been significant interaction between this sector and civil society organizations. Generally, the government has done well in dealing with issues such as natural resource management on a community level. Innovative approaches have been developed, the most important being the Community Based Natural Resource Management Programme, which influenced and impacted many rural Namibians. As the results suggested, elements of this programme were amenable to the issue of ABS implementation. What was also coming to the fore was a need to work closely with these stakeholders, through participatory mechanisms that could ensure ownership and control of their own affairs.

8.6.1.4 Civil Society Stakeholders

The results showed that the civil society sectors, especially the NGOs, were significant players in ensuring that communities benefit from sustainable management of natural resources, biotrade and bioprospecting initiatives in Namibia. The NGO sector played a significant role in the creation of conservancies, which contributed to the development of Namibia's exemplary natural resource management strategy and they naturally extended some of the lessons learned from their experiences in these sectors. Civil society in Namibia however, contributed significantly towards building the capacity of rural communities and providing assistance with regard to sustainable natural resource management (UNEP, 2012

p.13). This sector has also played a central role in promoting and strengthening partnerships between the government and local communities. This was an interesting situation as in many contexts the norm has rather been that governments are generally suspicious of activities from this sector.

An example of this mistrust or suspicion between government and private sector is elucidated by Kirsten and Andrew (2006) in which they point out that participants of a workshop, representing governments, marketing boards, the private sector, aid agencies and international organizations, emphasised the need for improved communication between government and private sector in order to overcome this mutual suspicion and develop an understanding of the different points of view. The focus of this workshop was on partnerships between government and the private sector to overcome food shortages in Eastern and Southern Africa.

A recently established policy contributed indirectly to environmental sustainability, namely the Government of the Republic of Namibia and Civic Organizations (COs) Partnership Policy, 2005 (DRFN, 2008 p. 7). This policy supported partnership opportunities that benefit the Government, COs and civil society. The policy was also expected to establish a greater sense of local identity, community and ownership, possibly leading to more inclusive, equitable and socially sustainable development - all necessary elements in biodiversity conservation, combating desertification, adaption to climate change and sustainable development generally (DRFN, 2012 p.7). This attested to the fact that the relationship between civil societies in Namibia had evolved positively and the results in this study indicate that, especially in the ABS policy arena, government owed a lot to the civil society in terms of on the ground activities of biotrade and bioprospecting.

This could be explained by the dichotomy in Namibia's governance framework which described a dual focus on both sectoral and participatory elements within Namibian policy processes (Seeley et al, 2007 p. 110). One stream of policy elements addressed enhanced use of the environment and natural resources through a variety of stated intentions and recommendations. The other, less obviously, directed at sustainable development, was considered equally if not more important, and addressed broad participation, devolution of responsibilities and community empowerment. In many instances, the focus on participation and community involvement resulted in a high level of involvement by civil society in policy implementation while government institutions remained focused on the sectoral content of the policy framework (DRFN, 2008 p. 7). This focus on community participation and empowerment to address improved management of natural resources was extended to encompass adaptations to desertification, conservation of biodiversity and withstand climate change - including ongoing natural climate variability with its intermittent droughts (DRFN,

2008 p. 8). This explained the heavy involvement and participation of the civil society in ABS implementation. Effective ABS implementation had a strong potential for facilitating poverty reduction and was also situated within the biodiversity policy arena.

8.6.1.5 Private Sector Stakeholders

The results of the interviews indicated that the private sector had not been very much involved in the ABS issue within Namibia. UNEP (2012 p. 13) found that a typical value chain for biotrade began with the harvesters or resource stewards (wildlife). Moving higher up in the value chain the majority of buyers, processors, manufacturers, wholesalers, distributors and retailers were found outside of Namibia. The majority of value addition would be captured outside the country, much like diamonds. This had implications for ABS implementation in Namibia in two ways. On the one hand it was a signal that Namibia had been able to understand and develop mechanisms to work with the private sector externally and was therefore able to effectively engage in ABS contracts. However, on the other hand, the necessary technological and human resource capacity inside Namibia was not being strengthened to the necessary levels and the private sector inside Namibia was not being fully engaged.

The civil society respondents pointed out that access to finance for ABS-related activities from both public and private sector financing institutions was challenging. UNEP (2012 p. 13) confirms this observation. UNEP (2012 p. 13) further maintains that financing by commercial and state banks played a very limited role in supporting biodiversity-based enterprises. This might have been because financial institutions had inadequate knowledge of ABS and bioprospecting, and thus perceived it as a new and risky industry in which to invest. The business of ABS would be cost-intensive and thus successful implementation strategies would need to be found, especially in terms of engaging both the public and private sector financing institutions to invest more in the ABS sector. Over the last 10 years, the IPTT has coordinated investments in the INP sector with an annual budget of approximately NAD 42 000 (USD 5 700) provided by the Ministry of Agriculture (UNEP, 2012 p. 15). This amount was simply not adequate for all the work required for full and effective ABS implementation. This figure may not be correct since substantially more funds may have been put in by government through a number of initiatives not reflected or considered when this amount was calculated by those who worked on the project.

8.7 KEY ISSUES THAT AROSE FOR EACH OF THE CRITICAL FACTORS IN TERMS OF ABS IMPLEMENTATION IN NAMIBIA DURING THE DIFFERENT PHASES

8.7.1 Phase 1:The Beginning Of The Abs Policy Dialogue In Namibia (1990 -1995)

8.7.1.1 Good Governance Structure in both Provider and User Countries

Since independence, Namibia was hailed for its modern policy frameworks and innovative approaches (UNEP 2012 p. 4). Establishment of a legal framework for environmental management in Namibia bridged the gap between drafting and implementing legislation.

In the decade after independence, the drafting of policy received a vast amount of attention in many sectors. Yet, the process for developing environmental legislation for Namibia was very slow and incomplete (DRFN, 2008 p 4). This might have been due to the fact that significant developmental, economic, social priorities and political interests had to be assessed. The various respondents in the interviews confirmed the slow and incomplete nature of this phase. Consequently, relatively little environmental legislation was passed during these years. There had however, been a slow increase in the number of policies being passed, especially from 1996 onwards. The most significant piece of legislation was the Nature Conservation Ordinance, 1975 as amended through the Nature Conservation Amendment Act, 1996. This Act set the stage for Community Based Natural Resource Management (CBNRM) on communally owned lands, a major contributor to alternative livelihoods and sustainable development in Namibia (DRFN, 2008 p. 4). CBNRM was implemented primarily by NGOs or civil society (DRFN, 2008 p. 5 and UNEP, 2012 p. 13). As the results showed, all the different categories more or less agreed that this programme did set the stage for ABS work in Namibia and had significant implications for an ABS implementation framework.

The perception by some individuals that the environmental sector had no teeth - was probably due more a lack of monitoring and enforcement capacity, as was pointed out by the government and NGO sector respondents. There was also a shortage of environmental lawyers in Namibia, with an emergence of a few in the mid-2000s. The governance structure of any country is influenced by its political environment and framework and Namibia was no exception in this regard. As pointed out by some government respondents, after independence, the Namibian government had the burden of legislating to redress the inequalities and injustices left by the apartheid regime. The challenge, as was evident from the majority of categories of respondents, was in moving from policy and legislation to implementation and action on the ground. This challenge of bridging the gap had had a significant influence on Namibia’s approach towards ABS. In general it could be argued that

Namibia's environmental legal framework had assured the emergence of good governance structures that had paved the way for Namibia's innovative approach towards ABS.

Since independence, Namibia had enjoyed peace and democracy - which included basic human rights and freedom of speech. This emphasised, proved and promotedgeneral good governance structures in Namibia.

DRFN (2008 p. 5) pointed out that in Namibia some aspects of the environment were regularly mainstreamed into policy and legislation, although contradictions and lack of realisation of implications of the words themselves were often evident. UNEP (2013 p. 22) maintains that the government has been supportive as evidenced by the numerous institutions and initiatives put in place to support and promote the development of this sector. They further point out that more strategic engagement of government institutions is needed, such as by the Ministry of Trade and the financial sector in Namibia.

This study points to the fact that this has not been enough and that the research and academia sector would also need to be engaged more comprehensively. Other stakeholders to be included would be the National Planning Commission, the ministry responsible for coordination of research and technology and the Ministry of Finance.

The above is important to further increase and cement Namibia's leading role in ABS implementation. In the negotiations of the Protocol Namibia has demonstrated her capacity to take advantage of the growing international demand for biodiversity-related products (UNEP, 2013 p. 23) and this translated into informed decision making at the negotiating table.

8.7.1.2 Discussion on the Indicators Derived for this Critical Factor:

Table 8.8 below shows that in terms of ABS good governance measures Namibia has been scoring relatively well. It could, therefore, be argued from the above that Namibia has good ABS governance measures in place at the national level.

Table 8.8: Assessment of Good Governance Structure in both Provider and User Countries Based On Derived Indicators

GOOD GOVERNANCE STRUCTURE IN BOTH PROVIDER AND USER COUNTRIES	
Indicator derived	**Namibian status based on results of assessment**
Functional and effective user country measures in place	Since Namibia has focused primarily on putting the necessary provider measures in place there has not been much focus on good governance. The results indicate though that Namibia has potential to become a user of its own genetic resources and the necessary frame is in place to ensure that user measures are effective
Domestic ABS instrument in place (provider measures)	The results indicate that Namibia has developed a system that can be regarded as innovative for dealing with ABS. The IBPC is in place although it is not very efficient. The legislation is being discussed in Parliament and is expected to be finalized in 2014.
A reliable legal system is prevalent	The policy framework is there and can be considered reliable. Its effectiveness however depends on the human dimensions for effective implementation. There are challenges in this regard. The challenge seems to be the capacity to implement and enforce the legal and policy framework in Namibia. This is further hampered by the lack of harmonization of policies and legislation and lack of cooperation across sectors and agencies.
olitical will and commitment towards ABS implementation prevails in the country	The results indicate that this has been present throughout the evolution of ABS in Namibia. The ABS policy arena has enjoyed significant support from the highest level of the policy makers. This is exemplified by the number of workshops held including top level officials such as the President and the Minister of Environment and Tourism has officiated.
Signing and ratification of the ABS Protocol	Namibia has signed and ratified the Protocol. This is a significant step especially given that it took time for Namibia to do so as focus was being given on consultation and advocacy on the Protocol within the country after it was adopted in Nagoya. This is a clear sign of the political will and commitment of Namibia to engage with the ABS issue.
Upholding the rule of law is guaranteed	The Judiciary in Namibia is independent and the rule of law is guaranteed. No cases so far have been brought to the judiciary. However if one takes into account of experiences in other development sectors where cases reached the courts, the rule of law has been maintained. There is no reason why the same will not apply to ABS cases.
Guaranteed equity and equality in terms of transactional assistance for traditional and rural providers of genetic resources	The results have shown that Namibia has done extremely well on this indicator. The policy framework of Namibia has a dichotomy that has allowed for work to occur at the grassroots level and a significant effort on ABS advocacy has taken place across the country aimed at empowering communities.

8.7.1.3 Assigning Property Rights and Intellectual Property Rights

Workshop participants at an ABS workshop on the Interim Bio-Prospecting Committee launch and inception deliberated the issue of the legal position of private land owners in Namibia with regards to the right to bioprospect for indigenous botanical resources on their own land. The outcome of this debate - which had implications for the critical factor assigning

property rights and intellectual property rights - was that in terms of Namibia's Nature Conservation Ordinance, private landowners are only allowed to use such resources on-farm for own private consumption. For commercial use, free permits were to be issued to them for law enforcement purposes and for bio-prospecting they would need to apply for a bio-prospecting permit (du Plessis and Becherer p. 12).

Traditional knowledge ownership - as it relates to Bioprospecting still needed to be clarified in Namibia. The IBPC and the Biotrade Working Group however, took a conscious decision to include Traditional Knowledge only when it was clear that it had been used in the process of bioprospecting. A traditional knowledge fund was being proposed at one stage in the draft ABS bill.

The results indicated that there is generally a clear understanding of ownership of genetic resources and traditional knowledge in Namibia with a bit of confusion with regard to traditional knowledge in terms of ownership.

8.7.1.4 Discussion on the Indicators Derived for this Critical Factor

Table 8.9 below provides a summary of how Namibia has fared against the indicators derived based on the critical factor. Generally it seems the frame conditions for success are there what is challenging is the implementation of the legal framework to allow for more hands on experience to allow for revision and adaptation through learning by doing.

Table 8.9 Assessment of Assigning Property Rights and Intellectual Property Rights Based on Derived Indicators

ASSIGNING PROPERTY RIGHTS AND INTELLECTUAL PROPERTY RIGHTS	
Indicators derived	**Namibian status based on results of assessment**
Clear rules on who can issue Prior Informed Consent and Mutually Agreed Terms	Based on the discussion and the proposed legislation it is clear who can issue PIC and MAT. The fact that a number of products involving communities and their knowledge are already in international markets attest to that. Ownership of traditional knowledge seems still to provide challenges however generally regarding ownership of genetic resources the role of the state is clearly understood by all.
Clear rules on how the genetic resources and knowledge will be transferred to third parties	Namibia has practical experience of how to handle the transfer of genetic resources and knowledge since collaboration in ABS research and the transfer of GR has occurred. There are two types of Material Transfer Agreements models that have been developed and one has been used regularly.
Clear rules as to which resources and rights require permission before accessing	As has come out in the discussion this is clear from the results. What is perhaps challenging is the issue of TK however since there has been cases where TK is involved and work on ABS has continued. The implications are that these rules are clear.
Commercial rules and administrative rights are clearly defined	The results and the literature indicate that in the Namibian ABS scene there has been more private sector participation from outside Namibia based on contract law. This implies that this indicator is met.
Clear rules on the roles and responsibilities of both user and providers with regard to the above rights	The material transfer agreements and experience made in Namibia attest to the fact that Namibia is clear to some extend on the roles and responsibility of both the user and the provider. The challenge seems to be the capacity in terms of human resources and institutions to enforce these rights and to ensure compliance. This therefore may results in not having had the system tested regularly.

8.7.1.5 Summarizing Remarks for Phase 1

All the different stakeholders more or less agree that the environmental policy and legislative framework in Namibia did set the frame for ABS work in Namibia. Good governance prevailed and ownership of genetic resources is known. There is however a need to look further into the issue of traditional knowledge.

It seems that the category that is most engaged with this issue and is able to articulate the challenges and problems around it, is the civil society. Real ABS initiatives have also emerged led by this sector in partnership with the government sector. The private sector at this stage is minimally involved. Research and academia saw a flurry of activities when the call for more information on Namibia's biodiversity was made and significant body of knowledge was generated by both Namibian and international scientists. It must be noted

that Namibia has well maintained history of research into biodiversity especially desert ecology through work led by the Namibia Desert Research Foundation (DRFN).

This phase (1990-1995) also saw the emergence of environmental NGO's which kept the environmental debate, advocacy and awareness creation open and which recognized the need for capacity building. Government seems to have been critically involved within the sector as can be seen with the establishment of the NNBP, which became the flagship programme for biodiversity work and ABS.

8.7.2 Phase 2: Experience On ABS Five Years After Independence And The Beginning Of The ABS Dialogue Proper (1995 -2000)

8.7.2.1 Effective, Functional and Non-Complex Administrative Structure/Framework is in Place

The results indicate that lack of coordination and communication seem to have been the main challenge for effective implementation of ABS in Namibia. This is confirmed by Krugman and Katjirua (2007 p. 27) who argue that while national ABS legislation was under development in Namibia, there was no coordinated national approach or consistent (interim) national institutional framework for handling incoming requests for access to genetic resources (for academic research or commercial purposes) within Namibia's borders. Access requests were received through different government ministries, departments, inter-institutional groups, or NGOs. These initial points of contact had little, if any, guidance or capacity to respond to these requests in a logical, consistent and speedy fashion. As a result, access requests were either not processed due to the absence of a framework (approaching parties may have been told to wait until the ABS legislation was passed) or denied/ rejected and (in cases where this happened by default more than by design) promising bio-prospecting partnership opportunities may have been lost, or approved (following ad hoc judgement, in the absence of collectively agreed and accepted criteria and guidelines). This was particularly the case in the early years of the ABS debate. This has been confirmed through the interviews by all stakeholders. The administrative structures at the beginning of the ABS debate can therefore be seen to have been inefficient and,to some extent, overly bureaucratic - often due to the lack of coordination.

A review of Namibia's permitting system and its efficiency in terms of bioprospecting and regulating access was done by Cole and Nakamale (2008 p.4). Their findings also point to the fact that while almost 1000 research and collection permits were issued since 1999, many of them to foreign researchers, only 22 MTAs were signed, all of them since 2005. They also point out a number of constraints with the Namibian permit system, among them the lack of coordination, bureaucratic and complex administrative procedures. This resulted in high transaction costs, lack of control at points of exit from Namibia, and difficulty in distinguishing

between pure academic research, research with bioprospecting potential or pure bioprospecting (du Plessis and Becherer, 2008 p. 1). A “one-stop-shop” for streamlining the permit system was proposed.

The results also indicate that research was not coordinated, resulting in this general state of non-cooperation. Cole and Nakhamela (2008 p. 31) also found that Namibia did not have a state-wide coordinated approach to the issue of research on and export of biological resources.

They recommended that Namibia develop a standard MTA covering all biological resources. The importance of setting and sticking to firm time targets for providing service to applicants was also emphasised in workshop discussion of what steps were required to streamline the permit system and to reduce transaction costs for researchers and potential prospectors (du Plessis and Becherer, 2008 p. 2). The concerns raised by the various categories of stakeholders with regard to coordination and harmonisation of procedures to allow for efficiency were also considered by others active in the Namibian ABS policy arena. The challenge however, still remained on how to effectively implement these recommendations.

The need to liaise with tertiary education institutions about the proper permit application procedures was also proposed. The Research and Academia sector also needed to be recognized as important, overcoming the perception by some in the government sector that Namibians themselves could be the biopiracy culprits. In this regard, it was proposed that a handbook or guide specifying and spelling out the procedures should be developed (du Plessis and Becherer, 2008 p.4). This aspect had implications for the critical factor addressing information asymmetries. Such a hand book would greatly contribute to reducing information asymmetry in a very critical arena of ABS i.e. the research permit and its requirements.

Furthermore, Cole and Nakamela (2008 p. 31) recommended that a template for persons having to review research permit applications for ABS should be developed. Moreover, research and collection permit applications should all be in a similar format, which would require agreement as to what criteria were being reviewed, with a signed MTA would have to be concluded before a research permit was issued (Cole and Nakamela, 2008 p. 32).

In a workshop on ABS, it was pointed out that the purpose of reviewing permit applications was not to challenge or improve the academic merits of proposals, but to ensure that national interests and biodiversity were adequately protected (du Plessis and Becherer, 2008 p. 12).

8.7.2.2 Institutional Efficiency and Administrative Efficiency

The interesting finding however, as pointed out by Krugman and Katjirua (2007 p. 27), was that despite these perceived inefficiencies in the institutions and administration, some procedural patterns for dealing with incoming access requests continued emerging. For instance, access requests involving the collection of plant materials for academic research have tended to be passed to NBRI for review and response, while access requests entailing biological resource collection to engage in research and development for commercial application have tended to end up with CRIAA for vetting and further handling. These requests have then ended up with the permit office housed in the Directorate of Scientific Services in the Ministry of Environment and Tourism.

Consultation between the DSS and the NBRI on what action to take has increased over the years. Some of the requests have also come directly to the CBD national focal point and were then forwarded to the other stakeholders for consultation. At this point, due to the awareness generated over the years, the National Focal Point has been increasingly informed about requests and other bio-prospecting and bio-trade activities occurring or planned to occur in Namibia. Cole and Nakamale (2008 p. 31) also found that cooperation existed between MET and the various institutions from which it required inputs for the issuing of research permits and that there was general support for the idea of a one-stop-shop.

They did however, highlight the seeming lack of awareness about the existence of the Interim Bio-prospecting Committee, especially outside of MET (Cole and Nakamale, 2008 p. 6). The interviews confirmed this, since the results from the government stakeholders pointed to the confusion about coordination of ABS in Namibia, to some extent. This could be ascribed to the sectoral nature of Namibia's development agenda which emerged from around the third national development plan design process (DRFN, 2008 p. 11). The process of developing the national ABS legislation and the various national workshops and consultations contributed greatly to increased national awareness.

The results also indicated an emergence of several multi-stakeholder institutions and initiatives since Namibian independence that contributed to the development of Namibia's innovative biotrade approach and encouraged the participation of local communities.

The most important of these were:

- The Namibia National Biodiversity Programme (NNBP)
- The Biotrade working Group (BWG)
- The Indigenous Plant Task Team (IPTT)

8.7.2.3 Discussion of Indicators Derived for this Critical Factor

The assessment for this critical factor based on the derived indicator is reflected in Table 8.10 below.

Table 8.10: Assessment of Administrative Structure/Framework Based on Derived Indicators

EFFECTIVE, FUNCTIONAL AND NON COMPLEX ADMINISTRATIVE STRUCTURE/FRAMEWORK IS IN PLACE	
Indicators derived	**Namibian status based on results of assessment**
Availability of information about the national system for access and use of genetic resources	The discussion showed that there is a significant body of knowledge about ABS and the national system. This is contained in the national reports, various workshop reports and with individuals within the country. The discussion highlighted the need for a one-stop-shop for ABS related information.
Effective and functional institutional framework in place	The institutional framework is in place and is not complex. The challenge is that players within the system are often operating in isolation leading to uncoordinated, unharmonized implementation of ABS. The discussion however points to the fact that despite these challenges the system does have a certain measure of efficiency and functionality.
Decision-making on ABS application is clear and decentralised	Some more work can be done to ensure that decision-making is clear and efficient. Generally it seems to be clear but not decentralized.
A rights to appeal is provided for in case access is denied for reasons that the firm/users did not intend or cannot change	It is provided for. In the past access has been refused due to information asymmetry. As time has gone by a different, more amenable approach was developed that relies on contract law to facilitate access whilst the Namibian ABS legislation was being finalised.
Stakeholders are identified and the competent authority is known	There is a clear understanding of the various players in the ABS policy arena and the competent authority is known.
One Permit system is being used	This has been considered and is proposed but has not yet been implemented. To date there are different permits being used.
Model contractual clauses are in use	Namibia has managed to get products on the international market through the use of contract law. This implies that this practice is in use.
Clear rules are being used for PIC, MAT and MTAs for applicants seeking access to GR and TK	It seems from the results that there has been an emergence of rules based on experience with the cases that Namibia has been dealing with. There is however a need for these rules to be codified and institutionalized.
Effective, simple and functional compliance measures are in place	Monitoring and enforcement seem to be a challenging issue based on the discussion, althoughthere have not been serious cases where this has become apparent. Namibia has long-standing monitoring and enforcement experience within the wildlife sector which can be extended to the ABS sector. There may also be a need to implement the provisions of the Nagoya Protocol regarding compliance measures.
There are clear rules and/or processes for the involvement of ILC's for access to genetic resources and associated TK	The discussion has clearly pointed out that Namibia has extensive policy and hands-on experience of dealing with the local communities within the ABS policy arena as well as within the CBNRM sector which has significant learning and best practice implications for ABS implementation.

8.7.2.4 Addressing or Accounting for Time Lags to the Generation and Sharing of Benefits

The results indicate that Namibians are aware of the need to manage expectations and thus to ensure that measures are in place to address time lags to the generation and sharing of benefits. Namibia has demonstrated this through the Community Based Natural Resource Management Programme (CBNRM). UNEP (2013 p. 8) maintains that an innovative biodiversity conservation paradigm, placing communities at the center of conservation has been implemented effectively in Namibia. Its overall impact over the years in Namibia has been positive, poverty neutral, and pro-poor. The sustainable management of wildlife has been well established through the CBNRM programme and Namibia boasts with a 42 % (and growing)of its surface under some form of conservation management (MET, 2008).

As was pointed out, in terms of managing time lags to benefits, assistance from donors has helped Namibia to overcome this challenge, especially in terms of benefits generated under the community-based natural resources management program. The GEF has funded numerous projects related to biotrade in Namibia.

These were included in the Integrated Community –Based Ecosystem Management (ICEMA) project (2004-2011), the Country Pilot Partnership for Integrated Sustainable Land management Programme (CPP) (2008 -2012 phase 1). As well as the Innovative Grant Mechanism (IGM) specifically supporting Biotrade initiatives. Of note was also the UNDP–GEF Small Grants Programme (2003 ongoing). Namibia has now also established the national Environmental Investment Fund (EIF), which was launched in 2011.

For work on developing the ABS legal framework bilateral initiatives were significant. The German Government supported Namibia's National Biodiversity Programme (1994 – 2004) through the then German Technical Agency for international cooperation (GTZ[32]). The programme was later known as the Biodiversity and Sustainable Land Management Project (2004 – 2012) (implemented through the GIZ). This programme has a specific focus on biotrade and bioprospecting and has supported numerous activities at the national level. The European Commission Rural Poverty Reduction Programme (2005 -2011) also provided support. The United States has committed itself through the Millennium Challenge Account (2009 – 14), to strengthening the functionality of Namibia's IPTT program which has carried out excellent work related to biotrade on a very limited budget.

[32] GTZ is the German Agency for Technical Cooperation which is now known as GIZ. The German Bilateral Cooperation to the environment sector in Namibia was facilitated through GTZ.

As can be seen from the time frames, the initial ground work was done by investment from within Namibia itself, especially in the beginning stages of the CBNRM programme. The funding that came in later served as an anchor to manage expectations whilst assets, capacity building, ownership and empowerment was being built and the investment was maturing. This approach helped many communities to overcome the challenge of time lags to benefits, especially in the CBNRM sector and the lessons learned have significant implications for ABS implementation. Care must be taken that the initiatives funded through development aid are mainstreamed into the larger national development agenda to ensure continuity and sustainability of the initiatives as government funding can then take over. Over the last 10 years, the IPTT has coordinated investments in the INP sector with an annual budget of approximately NAD 42 000 (USD 5 700) provided by the Ministry of Agriculture (UNEP, 2012).

8.7.2.5 Discussion of the Indicators Derived for this Critical Factor

Table 8.11 below provides the discussion for the derived indicators for the critical factor.

Table 8.11: Assessment of Accounting for Time Lags to the Generation and Sharing of Benefits Based on Derived Indicators

Addressing or accounting for time lags to the generation and sharing of benefits	
Indicators derived	**Namibian status based on results of assessment**
Contribution of ABS to the national economic and human development through monetary and non-monetary benefits	There is clear evidence that Namibia has understanding of the contribution of ABS to human development and national economic development. Namibia has a history of natural resource accounting in the wildlife sector and this should be extended to the ABS sector. The CBNRM sector keeps detailed record of the contribution of its programme to livelihood security, poverty alleviation, assets built, capacities developed and the general empowerment of the participating communities. This has been a powerful drive for political commitment and securing of finances both from within and outside Namibia. It can be argued that the same has occurred for ABS in Namibia. There is however room for improvement.
National strategies for the application of technology, skills transfer, biodiversity valuation and negotiating capacities are in place	There are no such strategies in place especially for application of technology, skills transfer and biodiversity valuation. It is important to note that already in 2002 the ABS component in the NBSAP pointed to the development of such strategies. Energy however, went into developing the legal framework and approach to ABS in this process. However, as is evident from the results, Namibia has excellent negotiating capacities in all the sectors related to ABS.
Clear rules for scientific and research co-operation	There seem to be clear rules for research and scientific cooperation. Coordination and cooperation amongst the players seems to be the challenge.
Clear rules and guidelines for benefit sharing are in place	The Namibian experience points to the excellent understanding and insights on practicalities around benefit sharing within the ABS policy arena. Products are in international markets and benefit sharing mechanisms are in place.
Checkpoints are established to ensure the transparency of the value chain through which the genetic resource is going to ensure appropriate benefit-sharing	Check points have not been established. The Nagoya Protocol is now in place and this can facilitate for the development of checkpoints at the national level and complimentary checkpoints at the international level.

8.7.2.6 Summarizing Remarks for Phase 2

This phase points to the fact that even if the institutions are not efficient and administration is complex and not efficient, work can still continue. However, this does require significant political will and commitment together with a cross-sectoral approach. As was the case with the first phase, most practical expertise on ABS in Namibia seems to reside with the civil society and the local community sector. The private sector seems not to be visibly involved and were drawn in at a later stage. Thus, the ground work for ABS and basic research on ABS was being done by a combination of civil society, research and academia, and local

communities facilitated by government through good governance and the political will for empowerment.

An interesting finding from the respondents was the reference to scientists in government responding to politics and not to science in terms of policy setting and administration. This may have serious implications on the efficacy of initiatives and outcome of initiatives. Through reflecting on this study it seems that civil society sector are almost acting within the private sector domain but with the primary aim of generating benefits for the local communities. It has emeged that government may have recognized a significant tolerance of civil society in Namibia to the point that civil society members participate in national delegations alongside local community members and government officials as fully accredited delegates of the Namibian government.

Significant lessons were learned about time lags to benefits and the sharing of benefits. This points to the fact that strategies are required at the national level to manage benefit-sharing and time lags to benefits and that workers in the field should be cognizant of avoiding raising unrealistic expectations.

The example provided by the CBNRM programme in Namibia was seen as a potential model for ABS implementation work in terms of governance, institutions and on-the-ground implementation. Despite ABS emerging as a challenging issue then, there would be no need to re-invent the wheel since initiatives were already in place at the national level and could serve as guidance on what not do to and what to do in terms of national ABS implementation. Still, such implementation would need to be done carefully recognizing the unique nature of ABS.

Interestingly, given the fact that the issue of trust was not generally discussed in this context, the critical factor – building social capital and its importance to ABS implementation - has foregrounded the issue of the importance of trust or social capital. This started to emerge strongly during this phase as pointed out by respondents.

8.7.3 Phase 3: Informed Decisions On ABS And Its Marked 15 Years After Independence

8.7.3.1 Efficient Understanding of The ABS Market Structure within which the Transaction Must Take Place

The results were mixed on this critical factor. It appeared that from all the stakeholders the sector that had gained the most understanding of the ABS market was the civil society sector and their counterparts within government and the local communities sectors.

The literature shed significant light on this fact. It pointed out that due to the experience gained over the years in dealing with ABS implementation, a conscious decision was made by the Biotrade Focal Group, towards the end of the second phase, to handle bio-prospecting/bio-trade activities in Namibia on a case-by-case basis and to involve regional parties. To this effect, the biotrade/bioprospecting officer at the Council for Scientific and Industrial Research (CSIR) was invited to Namibia on a face-to-face brief at the Biotrade Working Group about developments in South-Africa. During these visits the bio-prospecting programme at the CSIR was also elucidated to the Working Group (Krugmann and Katjirua, 2007 p. 27). Collaboration for bioprospecting was agreed upon which then paved the way for work on the Hoodia case - a successful case for the region, as in what not to do and on ABS implementation (du Plesiss, 2013 *pers. comm*). During the Hoodia case, several delegations from stakeholders as far as the UK-Phytopharm came to Namibia to discuss strategies to pave the way forward. Other delegations interested in other potential resources also came to Namibia and were received by the Biotrade Working Group. The NBRI has further appointed an officer to deal with biotrade and bioprospecting issues in Namibia and to serve as the Secretariat for the Indigenous Fruit Tree Task Team.

A workshop on IBPC recommended that applications from serious research and/or commercial partners for bioprospecting permits should be fast-tracked as much as possible, by actively helping applicants to provide all the required information as quickly as possible (du Plessis and Becherer, 2008 p. 4).

According to UNEP (2012 p. 5), Namibia has demonstrated leadership in BioTrade, particularly with its active engagement in the international Access and Benefit-Sharing (ABS) negotiations. The trade of indigenous plants and wildlife could be expected to gain premium prices from export markets such as the EU, while indigenous crops and livestock products would be more suited for domestic and/or sub-regional markets.

The Eudafano Women's Cooperative has been pointed out by some of the civil society and government stakeholders as an example of best practice in terms of dealing with ABS in Namibia and understanding the market structure. UNEP (2012 p. 5) supports this view by stating that the Eudafano Women's Cooperative partnership with the Body Shop is an often cited example of best practice linking local communities to global markets. The Eudafano Women's Cooperative brings together approximately 4800 rural Namibian women who harvest Marula fruits. Marula oil today is seen as a high quality and sought after oil and is produced from the kernel of the fruit. Marula trees are common in northern Namibia and fruits are easy to harvest (Krugman and Katjirua, 2007 and UNEP 2012). Women in particular benefit from harvesting and utilising Marula fruits (CBD 2010 cited by UNEP 2012 p. 5). This work has led to now a well-established Community Trade Marula Oil from Eudafano

Women's Cooperative which negotiates the benefits derived from the selling of the oil which forms the basis of various cosmetics and lotions.

On the supply side, Namibia's private sector and other sectors with potential relevance to ABS implementation, has demonstrated its entrepreneurial and management expertise in dealing with the challenges of developing supply side capacities in order to access international markets, including those related to products. The interaction of PhytoTrade Africa, a regional natural products trade association with several Namibian members that work in close partnership with Aldivia S.A., a specialist lipids company based in France, has also contributed to the capacity for understanding the ABS market issues.

8.7.3.2 Discussion of the Indicators Derived for this Critical Factor

The assessment of this critical factor was based on the derived indicators as reflected in Table 8.12 below.

Table 8.12: Assessment of Efficient Understanding of the ABS Market Structure within which the Transactions Occur Based on the Indicators Derived

EFFICIENT UNDERSTANDING OF THE ABS MARKET STRUCTURE WITHIN WHICH THE TRANSACTION MUST TAKE PLACE	
Indicators derived	**Namibian status based on results of assessment**
Low transaction costs in the ABS market	It appears from the results that given the presence of knowledgeable partners in the ABS policy arena at the national level, especially through civil society with the necessary networks and contacts the transaction costs in the ABS market in Namibia are fairly low.
Measures are in place to allow investors to assess the commercial risks and opportunities in a country	There is a significant body of basic knowledge on the genetic resource of potential interest to commercial partners but this is not extensive and does not extend to most genetic resources outside the spheres of the obvious genetic resources for which there is a known use. Namibia's experience with other markets such as the diamonds, fisheries, agricultural and wildlife sector gives an indication of the relative risks and opportunities of doing business in the country. It can be argued therefore that measures are in place but a concerted effort for ABS is still required.
There is a national ABS value addition strategy in the provider country	The discussion pointed out that there is no coherent and systematic value addition strategy in place. This does not entirely reflect the situation on the ground since the Indigenous Plant Task Team can be considered as a partial move towards a value addition strategy at the national level.
Potential challenging issues in the market for ABS such as TK and socio-cultural concerns are being addressed	The results and discussion point to the fact that in Namibia internal reflection on the challenging issues surrounding ABS implementation in the socio-cultural arena have been considered and addressed. The necessary policy framework seems to be in place and lessons from that has significantly influenced the ABS approach in Namibia
The biodiversity resource base is being monitored, evaluated, managed and used sustainably and necessary conservation laws are in place	The results and discussion points to the fact that this indicator has been met it is clear though that there is need for investment in the requisite human resource for the scientific aspects of biodiversity research. There has been a focus on developing managers while at the same time the scientific capacity for basic research in core areas in biodiversity such as taxonomy has been declining.

It can thus be argued that there is a relative good understanding of how the ABS market operates within Namibia. The Namibian private sector however, has not been forthcoming and the financial institutions have also not been investing in the sector. There is need for greater engagement of these partners as well as the Ministries of Trade and Industry and Finance.

8.7.3.3 Presence of an Effective and Functional Biodiversity Valorization Strategy at National Level

The results overall seems to suggest that Namibia has no coordinated national strategy in place for valorizing biodiversity. The results further suggest that Namibia has a significant body of knowledge over some aspects of its biodiversity but that this body of knowledge has not been maintained nor significantly improved. There are also strong views demonstrated within the results that the human capital necessary for implementation of such a strategy has been dwindling and that it is under threat of not being replaced with new human capital. The literature also confirms the view that Namibia has a history of excellent biodiversity research (Barnard et al, 2009).

Moreover, the results point out that the matter of issuing permits seems to be one of the barriers to the effective implementation of ABS research and, therefore, indirectly also to the establishment of an effective biodiversity valorisation strategy. The transaction costs in obtaining a research permit and the time required seem to have been increasing over the years. In a workshop report, du Plessis and Becherer (2008 p.12) pointed out that the workshop participants agreed that when the National Research Council became operational it would need to work closely with MET and other authorities around issuing research permits, especially for research on protected species and for permits issued to non-Namibian researchers. It was further pointed out that Namibia would need to encourage basic research and that the MET should perhaps consider not charging for research and collection permits and issue them *gratis*. In the end however they have not yet consulted any of the stakeholders about the regulations, and efforts are now underway to rectify the situation.
It was also recommended that permits for ‘pure” research should be issued quite quickly (although the MET permit office already requires that applications are submitted at least three months in advance). It was recognised that bioprospecting permits would necessarily take longer; all timeframes apply to complete application forms and delays caused by incomplete information in applications is not the IBPC’s problem.

The IPPT seeks to encourage domestic value addition along the production chain specific opportunities for value addition differing, depending on the product (UNEP 2012 p. 15). Namibia’s approach has so far brought four new Namibian natural products (Marula oil, Kalahari Melon seed oil, Ximenia oil and Manketti oil) to the international cosmetics markets

(UNEP, 2012 p. 15). Several others (Baobab oil and pulp, Nara oil, Mopane essential oil, marula juice and fruit pulp, Commiphora resin, Devil's Claw, Hoodia, Terminalia root bark, Manketti Fruit) are at various stages within the ABS pipeline, and many other indigenous resources have been identified as possibly having commercial potential (Drews et al., 2008).

8.7.3.4 Discussion of the Indicators Derived for this Critical Factor

Table 8.13 below presents the assessment of this critical factor against the derived indicators.

Table 8.13: Assessment of an Effective and Functional Biodiversity Valorization Strategy at the National Level Based On the Indicators Derived

PRESENCE OF AN EFFECTIVE AND FUNCTIONAL BIODIVERSITY VALORIZATION STRATEGY ATNATIONAL LEVEL	
Indicators derived	**Namibian status based on results of assessment**
A national strategy for the promotion of the use of biodiversity and ethno-botanical knowledge for value creation, human and economic development is in place at the national level	This indicator has not been satisfactorily met. The necessary building blocks for this indicator in Namibia are contained in the NBSAP strategic aim. What will be required is the mainstreaming of these elements into the national development process and demonstrating the value to economic and social development.
Clear rules and guidelines how the economic valuation will contribute to deciding on ABS permits	There is already good understanding of the contribution of ABS to economic and human development in Namibia and the expertise are there for economic valuation. This indicator can be met fairly easily. However a lot more work needs to be done on this indicator.
A biodiversity inventory and investment centre is in use at the national level	There is no investment center for ABS related work. The results indicated that biodiversity inventory work has been on the decline. Namibia however has the potential to resuscitate these skills by providing the necessary incentives.
Domestic public and private institutions are involved in the identification of the commercial value of biodiversity	The results indicate that Namibia has over the years done significant investment in the ABS sector. It seems that investment was more from the public sector as opposed to the private sector and implementation was driven by the civil society.
Existence of potential research partners in the provider country are made public	Potential research partners exist within Namibia, however it is not clear from the results whether there is a concerted effort to make these partners known public.

Generally it seems the most important underlying challenge facing Namibia in this regard is the development and maintenance of capacity to engage in value-addition activities in relation to biodiversity. This will require significant interaction amongst the key stakeholders, especially between the public, private and research and academia sector.

8.7.3.5 Summarizing Remarks for Phase 3

This section highlighted the need for experience gained to inform policy and decisions on the way forward for ABS implementation. It revealed a general lack of understanding about the ABS market in Namibia and that the private sector was not significantly involved in ABS in Namibia. Interestingly, this gap was being filled by civil society operating so as to fill the gap left by the lack of private sector involvement.

Technology transfer and biodiversity value-adding strategies at the national level was confirmed as essential for effective ABS implementation but this would require significant investment in the building of human capital and capacity.

The private sector was shown to be integral to the successful implementation of ABS frameworks at the national level, and that government would need to facilitate and set incentives for private sector involvement. The urgent need was also shown to address the disconnect between government and the private sector with some measures put in place to reassure the private sector that they are indeed a critically important partner in ABS implementation at the national level.

The results were mixed on whether there had been adaptive learning over the years in Namibia. The progress made however, seems to indicate that learning has taken place and informed decisions were taken, albeit slowly.

8.7.4 Phase 4: Current State Of Affairs With ABS (2005 – 2012)

8.7.4.1 Effective Measures to Address Information Asymmetry in the ABS Implementation Framework

The results seemed to indicate mixed views on this issue. This in itself indicated that many of the stakeholders had not as yet fully understood the core issues surrounding ABS, and, therefore, information asymmetries still remained, especially in some key governmental departments. There had been numerous workshops held on ABS in Namibia. Yet, significantly, one of the lessons under this section was that workshops were not necessarily the best mode or medium for imparting ABS knowledge to stakeholders, but that there was a need for innovative information-sharing mechanisms. The results did confirm that information asymmetries were critical for ABS and need to be addressed.

Cole and Nakamela (2008 p. 32) recommended the establishment of a national awareness creation campaign to inform people, particularly rural communities, about research, and their rights, etc. The capacity of customs and police at points of exit from Namibia would also need to be strengthened, again demonstrating the need for awareness and coordination of efforts

towards effective ABS implementation. This also brings in the need for sharing information and knowledge. An important point was made that over the years there would need to be a differentiation between information asymmetries and knowledge asymmetries as both seemed to affect implementation in different ways.

8.7.4.2 Discussion on the Indicators Derived for this Critical Factor

The assessment for this critical factor against the derived indicators are presented in Table 8.14 below.

Table 8.14: Assessment of effective measures to address information asymmetry in the ABS implementation framework based on the indicators derived for this critical factor

EFFECTIVE MEASURES TO ADDRESS INFORMATION ASYMMETRY IN THE ABS IMPLEMENTATION FRAMEWORK	
Indicators derived	**Namibian status based on results of assessment**
The definitions in the Nagoya Protocol are being used especially for GR and utilisation	This is a requirement that must be looked at within the context of the time that it took to develop the ABS Protocol. The Namibian draft legislation has made provision for that.
A clear policy on science, research and technology including tech transfer is being used	There seems to be a policy on science and technology at the national level. A policy for research and technology transfer seems not to have been developed. It seems though that there is enough basic ground work to assure that such policies can be developed and implemented with relative ease - taking into account the results from this study in terms of coordination, communication and institutional efficiency
A functional CEPA initiative on ABS is in place at national level with a special focus on traditional knowledge	There is no such strategy in place, however extensive consultations have been carried out in the regions of Namibia to create awareness on ABS and the draft bill including its implications. A concerted effort should remain a priority.
Effective, efficient and functional institutional and administrative measures are in place	This has been discussed under the critical factor non-complex administrative structures.
Measures are in place to reduce potential negotiating and other inequalities between stakeholders	It can be argued that these measures are in place but have not been institutionalized for ABS. In the CBNRM arena this has been done and the step towards doing so for ABS should not be challenging. In general however Namibia has done well in this regard for ABS.

Rules and guidelines to ensure that functional and effective communication process at the national level are clear	This is an important one for Namibia. The results indicate that few people have access to the right information to effect the right actions. Rules and guidelines to ensure that functional and effective communication process therefore needs to be agreed by all and all need to stick to the agreed rules and process in terms of communication, this is especially true for the government stakeholders. Information asymmetry seems to be amongst the easiest of the critical factors to deal with, however since this depends on efficient unbiased communication amongst the key actors it is made difficult by the human dimension. As the issue of ABS plays of in the socio-political arena this further complicates the issue of information asymmetry since information is related to power and the ability to make informed decisions.

8.7.4.3 Presence of Effective and Efficient Measures to Build Trust (Social Capital) Amongst Stakeholders

The results points to the fact that social capital is regarded as very important, i.e the presence of networks and connections within the ABS market and policy arena, includingrelations of trust and mutual support, formal and informal groups, common rules and sanctions, collective representation, mechanisms for participation in decision-making and the presence of effective leadership within the ABS sector in Namibia,.

Namibian producers played a leading role in the development of the “Ubuntu Natural” hybrid standard developed by PhytoTrade Africa. Information asymmetries and social capital amongst the players, especially within the private sector was developed. While certification and quality standards remain a challenging barrier for Biotrade business, Namibian producers have gone a long way to obtain recognition domestically and internationally (UNEP, 2012 p. 22). However, much still remains to be done particularly with regards to certification and quality standards. The sector could benefit from further public and international support, especially in terms of market incentives and capacity building. Nonetheless, successful experiences suggest that the supply side capacity could be a positive impact on Namibia’s implementation of ABS measures (UNEP, 2013 p. 22).

Namibia has done well with regard to implementation of the (Multilateral Environmental Agreements (MEAs) particularly related to biodiversity, climate change and land degradation as well as CITES (DRFN, 2008 p. 14). These agreements have relevance to ABS implementation.

8.7.4.4 Discussion on the Indicators Derived for this Critical Factor

Table 8.15 below provides the discussion or assessment of the indicators derived for this critical factor.

Table 8.15: Assessment of effective and efficient measures to build trust (social capital) amongst stakeholders

PRESENCE OF EFFECTIVE AND EFFICIENT MEASURES TO BUILD TRUST (SOCIAL CAPITAL) AMONGST STAKEHOLDERS	
Indicators derived	**Namibian status based on results of assessment**
An effective, transparent legal, policy and administrative ABS domestic framework is in place	The Namibian framework is in place but more could be done in terms of effective implementation. The challenge that seems to hinder trust lies more in the human capital and human dimensions area. The results also points to the critical need to build trust between and amongst the players in the ABS sector within Namibia and internationally as over the years the various sectors has to some extend realized that there are serious mistrust issues that hinders effective cooperation, harmonization of policy and joint effort. This results in serious time delays, duplication of efforts, wastage of scarce resources, and general lack of concerted effective action on the ground in terms of implementation by some critical actors in the ABS policy arena in Namibia. Despite these challenges however, there somehow seems to have been some cooperation taking place over the years among some actors in the ABS policy arena. According to UNEP (2012) there is a good level of cooperation among stakeholders from civil society and the public and private sector.
Effective and functional administrative procedures are in place	The results points to fact that the procedures are there however the challenge lies in the human capacity and will to enforce and effectively implement these procedures. This results in mistrust developing within the ABS policy arena.
A good governance structure is in place at the national level	The discussion on good governance pointed out that Namibia from enjoys relative good governance overall for its ABS framework
The internationally recognised certificate is being used	At the international level this certificate is not yet in place

8.7.4.5 Summarizing Remarks for Phase 4

This phase has brought to the fore critical issues resulting from sincere self-reflection and review ofthe various phases from Namibian independence till now. One of the most significant insights came from the government sector respondents who argued that perhaps the real ‘culprits’ regarding misrepresentation in the area of ABS were not the private sector companies, but rather NGO’s, environmental activists, uninformed officials, and public media

that spread misinformation and raised unrealistic expectations in Namibia regarding ABS and its potential benefits. From this perspective then, the problem was rather with those implementing ABS themselves misrepresenting the potential value to communities and thus creating unrealistic expectations of the value. This was further worsened by lack of regulations, controls, monitoring, enforcement and knowledge. All though some may find this insight a bit unsettling and interpret it as criticism by the government sector of all other sectors, a second reading would make it clear that it also speaks about uninformed officials.

In addressing information asymmetry it would be important to know how to digest and internalize information gathered. There has been a big learning curve in the Namibia ABS sector over the years. What has become clear is that information is the oil that makes the ABS machinery work. However, the most strategic information is often not readily available and accessible from the industry. There must, therefore, be a strategy to allow Namibia to draw the right information from the right actors and distribute it to the right stakeholders.

It is also important to recognize this insight that Namibia has come to learn over the years. ABS is deeply concerned with the flow of information and benefits and in this regard information must be viewed as a national asset. The necessary policy, legal and administrative framework should be put in place but beyond these measures there should also be those actors who can interpret the law and make the information accessible and understandable to the stakeholders to ensure that the required and appropriate informed decisions are taken.
The role of the Namibian Research and Academia sector has been confirmed as critical in addressing information asymmetry through engaging in focused and targeted research aimed at addressing or filling information gaps. There is a perceived call for an embracing targeted training strategy, taking into account the required skills and knowledge necessary to implement ABS effectively in Namibia. This means a focus on the vocational training sector, scientist proper and related fields such as environmental lawyers, economics, biotechnology and so forth. An integral part of such a national training strategy tailored to meet identified needs and skills would be necessary.

Another critical concern that was highlighted in the reflection over the years was that scientists had been responding to politics and not that politics was responding to scientists - which had serious implications for trust building and addressing information asymmetry. This was discussed before and could lead to a situation where policy decisions were taken based on political imperatives that could have nothing to do with the realities on the ground and, therefore the right policy framework and action required for effective and sustainable ABS implementation.

There was a general sense of goodwill towards the view that trust was essential for effective implementation of the ABS legal, policy and administrative framework. Moreover, there was also a shared recognition in Namibia that trust was at the heart of full disclosure and fair negotiation in relation to ABS implementation and that it was important that trust was coupled with transparency and administrative efficiency.

The internal critical reflection pointed to the fact that Namibia had done well in terms of trust building between the private sector and the local communities, and the private sector and civil society. Yet, to some extent, they fared less well in relation to building partnerships between the private sector and government, and NGO and government. It was important to consider the point that the ABS sector had suffered from distrust as there are high suspicions towards some of the main actors - especially towards the private sector. Still, it seems that over the years suspicions have been dissipating and trust building was continuing - there have been fewer mistrustful statements being made. Trust issues must be looked upon within the context of Namibia's historic legacy of apartheid and colonialism – as this legacy left a culture of mistrust between different groups of people and towards authority structures. As trust is built on understanding, it would be the role of government to be a facilitator and to bring together the players to foster understanding and, through that, allow all players to do their job in terms of implementation.

An important final reflection was that Namibia has learned that ABS is much more complex than originally thought, and that there would be little immediate prospects of appreciable financial gain if the challenges were not addressed effectively in a targeted and coordinated manner.

8.7.5 The Internal and External Factors That Impact On The Critical Factors As Derived From The Global Survey On ABS.

8.7.5.1 Criticism from Different Interest and Advocacy Groups and Change in Legal Framework

Change in legal frameworks is especially important for investors from outside Namibia. This however, seemed not to have been a significant factor for Namibia, given that there was no ABS legislation in place till now. The change in approach within Namibia seems to have had a positive effect for ABS implementation since the number of ABS cases started to increase soon after. The change simply meant that Namibia became pro-active on a case-by-case basis, as was explained in the literature review. This opened the ABS sector for those investors willing and able to engage in an adaptive manner within the Namibian framework and conditions at that particular time.

Criticism from the different interest and advocacy groups seemed not to have had a significant impact with regards to ABS implementation. The core issue appeared to have been mistrust amongst the players. Despite this an apparent genuine effort towards finding common grounds for ABS implementation was made.

8.7.5.2 Advancement in Science and Technology As Well As Special Circumstances at the National Level

New scientific findings definitely had an impact on Namibia's ABS approach and the implementation of the ABS framework. Technology innovations also came to the fore since some technologies had to be adapted to suit the needs of the Namibian primary producers. Since Namibia has not become a significant user of its own genetic resources, the impact of this was difficult to assess. Special circumstances at the national level did influence Namibia's implementation approach, especially the dichotomy in its policy framework, as was discussed in the preceding sections.

Political pressure in Namibia could be seen as having had a significant positive influence on ABS implementation, especially from the political decision-makers. On the other hand, perceived political pressure or perhaps political favor or power by some actors in the technocrat's level seems to have hampered effective ABS implementation in Namibia. This was discussed extensively in the preceding sections.

Changing demand levels may not have had such a significant impact on Namibia since the pipeline approach assured many eggs in different baskets. What emerged though, was the negative impact of the inability to supply products, which may have led to the termination of some interesting bioprospecting initiatives within Namibia.

8.7.6 Overall Discussion for The Discussion Session

This study has shown that the ongoing challenge in Namibia, in terms of effective implementation, lies in the policy application arena at national level. It includes conflict between policies and legislation of different sectors, lacking an overall policy and implementation framework, and integrating sectoral policies with respect to addressing natural resources, the environment and its natural variability and change (DRFN, 2008 p. 8).

Policies in Namibia today are much better informed, but the legislation and regulations arising from these policies are languishing and implementation is slow, selective or negligible in many instances (Seeley and Montgemory, 2009 p. 164).

The political will and commitment however, has remained throughout and this has most probably forced the technical decision-making level to allow for progress in the ABS policy arena.

No overall policy has been formulated on participation, devolution of responsibilities or community empowerment, although this is included in most sectoral policies and has been addressed in the recent government – civil society partnership policy (DRFN, 2008 p. 8). The implication for ABS implementation has been significant. The civil society has risen to meet a great challenge and the findings of this study show that their role and contribution to ABS and community empowerment is well recognized. Challenges do still remain and the lessons learned as elaborated by the different categories of stakeholders point to the fact that these challenges need to be addressed for effective ABS implementation. The implementation of the ABS policy arena will require a multi-sectoral, multi-disciplinary and cross-sectoral approach involving communities and research and academia.

The findings also show that since independence inter-sectoral cooperation and coordination has been frequently spoken about and attempts to implement an integrated approach are undertaken at different levels for different purposes. This perhaps can be traced back to the design set-up of the national development frameworks after independence. An integrated, cross-sectoral approach was taken for formulation of the National Development Plans I and II (1995-2000, 2000 -2005), while a sectoral but cross-ministry approach was taken for NDP III (2005- 2010). Interestingly, NDP 4 was undertaken again without a sectoral focus. Implementation of these five year plans continues to be primarily sectoral, within individual ministries, rather than integrated. While integrated planning is frequently called for, it does not necessarily ensure integrated implementation. This issue came out clearly in the results from the various categories of stakeholders.

Another challenge that emerged from this survey was the lack of understanding amongst the actors of the others' primary interests and needs, as well as their understanding of one another's roles and activities in terms of ABS implementation, especially in the government sector. Poor communications and limited opportunities for communication, lack of coordination and integration amongst different segments of governments, and between governments and the people, hamper the possibility of overcoming of this challenge. This is, however, also true amongst the other groups, such as research and academia, the private sector and local communities.

By and large, the capacity to deal with ABS has been developed within Namibia with local communities, with their service providers (civil society), with young, up-and-coming middle-level decision makers and with a few impartial committed high-level decision makers.

The question that remains then is whether Namibia has been effective and successful in terms of dealing with ABS? The results suggest that the answer is yes.

The findings by Cole and Nakhamela (2008 p. 4) point to the fact that while almost 1000 research and collection permits have been issued since 1999, many of them to foreign researchers, only 22 MTAs have been signed, all of them since 2005. This indicates that there is interest in Namibian genetic material and transactions have occurred. Table 8.16 below summarises the number of permits issued between 1999 and 2007. The Ministry of Environment and Tourism estimates that 90% of the researchers have complied with the conditions of the permits issued.

Table 8.16 Summary of Research and Collection Permits issued in Namibia between 1999 and 2007

YEAR	No OF PERMITS ISSUED
1999	105
2000	91
2001	121
2002	112
2003	106
2004	124
2005	114
2006	110
2007	115
TOTAL	**998**

Source: Cole and Nakhamela (2008 p. 4)

Their analysis also pointed out that permits have been issued to researchers from almost 20 different countries. The main countries to which permits have been issued are presented in the table below.

Table 8.17 Main countries to which permits have been issued by Namibia

COUNTRY	No OF PERMITS ISSUED
Namibia	283
Germany	156
South-Africa	130
United States of America	83
United Kingdom	57

Source: Cole and Nakhamela (2008 p. 4)

The above warrants further investigation to further elucidate that Namibia was indeed successful in dealing with ABS the next session explores this issue further.

8.7.7 Has Namibia's Approach to ABS Implementation Been Successful?

To answer this question one would need to see whether there has been activities in terms of accessing of Namibia's genetic resources and whether transactions have taken place.

8.7.7.1 Cases of ABS and Biotrade in Namibia over the Years

As was said before, the issues of biotrade and ABS are interwoven and this has also been the case for Namibia. Success has sometimes been measured by the number of contracts,

patents and cases that a country has been able to negotiate and implement over years. The challenge with this view is that it negates all the other gains a country may have made such as technology transfer, capacity building and advocacy resulting from the investments of a country in engaging the ABS debate.

Also the income, business and development opportunities created through investment in biotrade should be taken into account. The indicators for successful ABS implementation, as determined by this study, attest to the importance of these other measures of success. The example of Costa Rica also exemplifies that.

Many Namibian biotrade cases (e.g. marula oil, devil's claw, ximenia) were initiated by the Traditional Knowledge holders and executed with their involvement as required by the CBD, and as an alternative to PIC. Additionally, it is worth considering that a proactive valorisation approach to indigenous resources changes "standard" ABS relationships completely: rather than responding to request for access from users, the providers choose which resources to prioritize and then seek appropriate research/user partners who are willing and able to work on the target resources. While some of the more formal ABS modalities might still be used in such arrangements (e.g. Material Transfer Agreements) others, like benefit-sharing agreements, might not be needed (since the terms of collaboration are dictated by the providers).

Most of the ABS work in Namibia became apparent in the mid-90s onward before that work focused on biotrade and the generation of markets, quality and standards of material, as well as general awareness of the issue. It must be pointed out though that this is an arbitrary division since it would be difficult to refer to any significant work on biotrade before the mid-90s in Namibia. It is indeed true that there may be some examples – devil's claw especially, and maybe the German colonial efforts with e.g. manketti – but most of these were simply exploitative trade in indigenous natural resources. As such, they could provide an interesting and illuminating contrast to later work aimed at increasing benefits to harvesters and Traditional Knowledge holders (Du Plessis, *pers. comm,* 2014).

An attempt was made to present ABS cases of genetic resources that have been of interest and that have been processed in Namibia. What became evident in the process, was how complex this issue was, so that it couldnot be easily reduced into a table due tothe need for extensive and detailed explanation.

Table 8.18 Cases of genetic resources that have been of interest and that have been processed in Namibia

ABS CASE GENETIC RESOURCE	Purpose		Success (Benefits)				
	Scientific Research	Commercial Research	Local value adding	Consistent demand	Improved resource practices	Capacity building	Sustainability
Marula oil	N	Yes	Yes	Yes	Yes	Yes	Yes
Ximenia oil	N	Yes Agreements signed	Yes	Yes	Yes	Yes	Yes
Kalahari Wild melon seed oil	N	Heads of agreement, (MTA in place	Yes	N	Y	Y	Y
Grass species	Y MTA in place, work not completed	Research permit, MTA (work not completed)	N	N	N	N	N
Scorpion Venom	N	None (permit not granted)	N	N	N	N	N
Snake Venom	N	None (Permit not granted)	N	N	N	N	N
All Namibian endophytes	N	None (Permit to carry out research not granted)	N	N	N	N	N
Moringa Ovalifolia all parts	N	None Permit not granted	N	N	N	N	N
!nara seeds	N	Failed verbal arrangements with TK holders	Y	Y	Y	Y	Y
Welwitschia resin	N	None	N	N	N	N	
Mopane essential oil	N	MTA, heads of agreement	Y	Y	Y	Y	Y
Comiphora resin	N	MTA(s), heads of agreement,	Y	Y	Y	Y	Y

The above table highlights the difficulties quantifying success in the ABS market by only looking at contracts. The difference between contracts and patents is significant, for example, and there are other IP rights beyond patents to consider (Du Plessis, 2014). There are, therefore, additional measures/indicators of success (e.g. local value adding, better prices, more consistent demand, improved resource management practices/sustainability etc. that must be taken into account. The case of comiphora resin, for instance, has had many benefits e.g. a factory is in place, products (local and international) are in the market, a visitor centre has been put up, several community forest registrations, amongst others. The same applies for Marula oil.

The challenge has been that some applications were turned down as there was not sufficient information, or no consensus could be reached to sign a transfer agreement, especially if the application had commercial intent. However, even in those cases the outcome of these applications indicates that genetic resources of interests can be followed up later.

8.7.7.2 Analysis of Material Transfer Agreements signed in Namibia Between 2008 - 2012

The material transfer agreements that are held by the Namibian National Botanical Research Institute shows that there is a healthy interest in Namibian genetic material. This is emphasized by the number of material transfer agreements signed for scientific and commercial research. These material transfer agreements cover plants, lichen, fungi and micro-organisms. It is important to keep the issue of time lags to the generation of benefits in mind when considering success in ABS cases.

These MTAs deal only with plant material. There are probably many other cases involving e.g. animals and insects that are not captured (Carr, *pers. comm*, 2014; and Du Plessis *pers comm* 2014). The information referred to here could maybe be gleaned from a review of the Ministry of Environment and Tourism's (MET) Research Permits. This was not done under the current study since the MTA's from the NBRI were sufficient to show that Namibia has indeed been handling cases and that there is an interest in Namibian genetic resource.

It is further important to point out that overlaps between biotrade and ABS blur significantly when Traditional Knowledge is involved – and the question is how to account for this aspect. In Namibia some of the work initiated under biotrade through the IPTT in 2000 still goes on, without any clear success yet, because of constrained budgets, human resources, technical capacity, organizational capital Du Plessis *pers. Comm.* 2014)

Given the sensitive nature of the research and the confidentiality of the agreements, the term 'plant material' includes various parts of plants such as essential oils, resins, leaves, roots, tubers amongst others. To protect the identity of the various research institutions, this study has only considered the origin of the institution. The type of institutions varied from universities, botanical gardens, private companies, multi-national companies amongst others.

This table intended to demonstrate that Namibia has engaged fully in the ABS arena at the national level in terms of actual agreements. The information is derived from an analysis of Material Transfer Agreements at the Namibian National Botanical Research Institute. The timeframe 2012 to 2008 was selected to see whether, in those specific five years, many

materials have been accessed. The table shows that most of the agreements for commercial research were signed between 2010 and 2008.

The table further shows that five (5) German, two (2) Belgian, five (5) USA, one (1) Zimbabwean, three (3) South-African, 3 United Kingdom and 4 Namibian research institutions have accessed and signed material transfer agreements in Namibia for both commercial and research purposes under this timeframe. It further shows that Namibian institutes were also involved in the ABS research both for commercial and research purpose. Namibian institutes have also gone into joint ventures with other institutions. Some institutions from outside have been coming back to Namibia over the years to acquire materials, while some started off with scientific research and then ended up with commercial research.

Table 8.19 Analysis of Material Transfer Agreements in Namibia over a period of five years (2012 -2008)

INSTITUTION	TYPE OF MATERIAL	MATERIAL TRANSFER AGREEMENT	PURPOSE		YEAR
			Scientific Research	Commercial Research	
German research institute (1)	Plant material	signed	Y	N	2012
Namibian Research Institutes (1)	Plant material	Signed (2)	Y	N	2012
South African Research Institute (1)	Plant material	Signed	Y	N	2012
USA Research Institute (1)	Various desert plants	signed	Y	N	2012
German research Institute (2)	Mixed plants	signed	Y	N	2012
Namibian Research Institute (2)	Various plant samples	signed	Y	N	2012
Belgium Research Institute (1)	Plant sample	signed	Y	N	2012
Belgium Research Institute (2)	Plant sample	signed	N	Y	2012
Namibian Research Institute (3) and USA Based Research Institute (2)	Various plant species samples	signed	Y	N	2012
German Research Institute (3)	Soil samples	3 agreements signed	Y	N	2012

USA Research Institute (3)	Plant sample	signed	Y	N	2012
USA Research Institute (4)	Fungus samples	signed	Y	N	2012
German Research Institute (4)	Plant Material	signed	Y	N	2012
UK Research Institute	Plant Material	signed	Y	N	2012
South African Research Institute (2)	Plant Material	3 agreements signed (on various occasions)	Y	N	2011
USA Research Institute (5)	Plant Material	signed	Y	N	2011
South African Research Institute (3)	Plant Material	signed	Y	N	2011
Zimbabwean Research Institute	Plant Material	signed	N	Y	2011
German Research Institute (5)	Plant Material	signed	N	Y	2011
German Research Institute (3)	Soil Samples	2 agreements signed on various occasions	Y	N	2011
Namibian Research Institute (2)	Plant Material	signed	N	Y	2011
UK Based Research Institute (2)	Plant Material	2 agreements signed at separate times	Y	N	2011
German Research Institute (4)	Plant material	signed	Y	N	2010
German Research Institute (3)	Soil Samples	signed	Y	N	2010
German Research Institute (1)	Plant Material	signed	Y	N	2010
Namibia Research Institute (3)	Plant Material	signed	N	Y	2010
German Research Institute (5)	Plant Material	4 agreements signed at various occasions	N	Y	2010
Namibian Research Institute (4) and German Research Institute (5)	Plant Material	signed	N	Y	2010
USA Research Institute (6)	Plant Material	signed	Y	N	2009

UK Based Research Institution (2)	Plant Material	signed	N	Y	2009
UK Based Research Institute (3)	Plant Material	signed	N	Y	2009
UK Research Institution (2)	Plant Material	signed	N	Y	2008
Namibian (4) and Zimbabwean Research Institute	Plant Material	signed	N	Y	2008
Namibian (4) and Zimbabwean Research Institute	Plant material	signed	N	Y	2008
() indicate the different research institute					

From the above it is clear that the process of studying a country from the perspective of the critical factors for ABS effective implementation has allowed for an in-depth and self-critical analysis of the ABS policy arena in Namibia. The insights gained are far reaching and when heeded will have a meaningful contribution to the policy design, development and implementation in Namibia towards the goal of effective ABS implementation.

8.8 CONCLUSIONS

The results indicate that the critical factors can indeed be used as a comparison within a country to track changes in terms of dealing with ABS over time. The various phases that have been assessed based on the critical factors and their indicators, clearly shows a progression over time in terms of how the Namibian government has been dealing with the issue of ABS.

The indicators that were derived from the global survey, based on the critical factors and the assessment in terms of the effectiveness of Namibia's approach towards ABS implementation over time, has provided useful insights and lessons learned that can lead to improvements in the approach that Namibia has taken both in terms of policy and implementation.

In general, the greatest gap with respect to ABS implementation appears to be on the level of individual knowledge, understanding and attitudes. Employees of relevant ministries, NGOs and private sector appear to have mediocre to excellent skills to undertake their specific responsibilities within the ABS policy arena. Despite mastering skills, many do not seem to have the understanding of the role of ABS in sustainable development and attainment of the higher development goals and thus do not have the appropriate attitudes

to address relevant issues. Even with skills, many are unable to broadly apply them to broad-based and cross-cutting problem solving, such as ABS implementation. As a consequence, this lack of understanding tends to affect the institutional attitudes towards the environment but permeate through to the ABS policy and implementation arena and hence the organizational and networking capacities so necessary for effective implementation. Unfortunately, this lack of overall understanding extends to many high level decision-makers who also tend to view suggestions from others as criticism or a challenge to competence.

Moreover, the results in this study suggest that this may be traced back to scientists who have become principal policy-makers and decision-makers. By implication and thus influencing the political decision-making processes to perpetuate this lack of understanding or unwillingness to understand, based on the realities on the ground from feedback from research and academia, civil society and the private sector. Therefore, the governance structure and the assignment of property rights seems not to be the main challenge but rather the challenge to move from drafting to implementation to the policy making and interpretation intermediaries through to the political decision-makers who can affect the necessary political will and commitment to affect enforcement and monitoring of implementation by all stakeholders.

Political will and commitment, especially amongst political decision-makers, as indicated by civil society through the patronage they received from the Office of the President, as well as by the various ministers of environment, seem to have been amongst the main driving forces for ABS implementation when the intermediaries have failed.

The results also confirm that the dynamism of the evolution of ABS, due to internal and external factors in the country, has an impact on the critical factors in terms of implementation at the national level. Political pressure (perceived or real) seems to be a significant factor, more so at the implementation level than at the policy level, since political will and commitment towards ABS has been assured. However, at the bureaucratic or technocratic level this has been blocked in terms of commitment to speed up implementation. The other external factor also has all but been confirmed as having an impact on implementation.

CHAPTER 9

OVERALL CONCLUSIONS AND POLICY IMPLICATIONS

This is not the end
– it is simply the pointer to the road less travelled and beyond –
the road towards full and effective implementation of the Nagoya Protocol

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9.1 INTRODUCTION

The present study investigated the critical factors necessary for ensuring the effectiveness of ABS instruments at national and international levels. The theoretical framework for the study was based upon New Institutional Economics (NIE) theory.

The study further developed indicators for the critical factors, and determined whether the critical factors and their indicators could be used to monitor progress in a country with regard to the development and implementation of national policy and legal framework in this area.

In order to do so, a number of expert interviews were completed, which provided the primary information on potential indicators of the critical factors, as well as additional critical factors. This information eventually became the basis of the questionnaire that was used in the international online survey on ABS. The last steps of the study consisted of the interviews for the Namibia case studies, as well as the desk study for the institutional learning under the CBD, during the negotiations of the Nagoya Protocol on ABS.

This Protocol provides the central point for this thesis since, after a long process of international negotiations, the *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity* was adopted in October 2010. The Protocol seeks to increase legal certainty on ABS issues by providing more detailed guidance on access (which must be with Prior Informed Consent, or PIC), utilization of GR, benefit-sharing (on Mutually Agreed Terms, or MAT) and compliance (including user measures to prevent illegal utilization). Member states are now faced with the implementation of this Protocol.

It is important to point out that the focus of the study was not to do a review of the Nagoya Protocol or domestic instruments in terms of their legal or non-legal aspects, but rather on the characteristics necessary to make implementation effective.

9.2 SYNTHESIS OF EMPIRICAL FINDINGS AND ANSWERS TO RESEARCH QUESTIONS

The main empirical findings were made chapter specific and were summarized within the respective empirical chapters i.e. Chapter 3 – Deriving the indicators for the critical factors, Chapter 6 - the results and discussion of the online global ABS survey, Chapter 7 - institutional or organizational learning in the CBD from the perspective of the ABS Negotiations and, finally Chapter 8- The Namibian Case study using the critical factors and indicators derived.

This section will synthesize the empirical findings to answer the study's main research questions.

The overall objective of this study was threefold. First, it was to confirm the critical factors in terms of their effectiveness to ABS implementation as well as the underlying assumptions in terms of ABS implementation at the national and international levels. It then sought to carry out an in-depth re-consideration and analysis of the critical factors, and lastly, to develop indicators for the critical factors themselves. The study thus provided another way of verifying the critical factors by means of a broad international survey.

In Chapter 3 – the literature review showed that:

1. The empirical framework provided by Richerzhagen (2007) was not used by workers to carry out and advance the assumptions contained in or underlying her work, as no literature based upon her work was evident. The search, however, also provides ample indications that the work of Richerzhagen (2007) up to now provides the most comprehensive and systematically structured framework to analyse the effectiveness of ABS regimes at the national and international levels.

2. The literature review further revealed that over the years there was a significant effort towards building a body of knowledge on ABS implementation globally. It also elucidates the fact that there has been no development of indicators for ABS implementation in a systematic and empirical manner based on an analytical framework, as provided for by the critical factors.

Chapter 6 – which speaks about the results of the global survey on ABS, has shown that the objectives of the study were met in that the indicators for the critical factors were confirmed,

as well as the importance of the critical factors themselves, both at national and international levels. The empirical results further confirmed that the assumptions made were valid at both national and international levels.

As seen in Chapter 6 - the factor analysis based on the indicators for the critical factors, allowed for all original indicators derived to be retained for use as indicators for the critical factors. Actors in the ABS policy arena now have a tool with which to measure their own progress and effectiveness in terms of ABS implementation. This tool has also been designed to ensure that in the development and design of their domestic ABS policy and legal frameworks such actors would have access to the indicators to continually gauge their effectiveness.

The indicators developed provide a check list to governments as to what elements they should consider within their ABS domestic frameworks that would assure them of a measure of success in this area. It is, therefore, recommended that those involved in the ABS policy arena use these indicators so that they can be further tested and refined in the interest of effective ABS implementation.

The indicators will need to be used taking into account the developmental stage, status and reality of the specific country, and also taking into account the external and internal factors that influence the ABS policy arena as discussed in chapter 7. The study has shown that indeed, these internal and external factors i.e. key political pressure, changing demand levels, new competitors, new scientific findings, technology innovations, criticism from NGO, criticism from industry, criticism from media, criticism from governments, and change in legal frameworks, do influence the ABS policy arena.

The main recommendations from the global survey on ABS, points to the need for more dialogue between the players in the ABS policy arena, particularly around implementation which is geared towards agreements or transactions that would be able to unlock the generation of benefits, as well as the equitable sharing of such benefits. If the ABS private sector would not be allowed to engage meaningfully in the ABS implementation process, this will be difficult.

The survey further revealed a critical need for actively building social capital amongst the various actors in the ABS policy arena, as well as building real political will and commitment. This would need to come, not only from the high level decision makers, but also from the technocrats and bureaucrats.

Chapter 7 on institutional learning within the Convention on Biological Diversity (CBD) has shown that there has indeed been significant learning within the CBD during the negotiation

of the Nagoya Protocol. The study points out that the challenge will be whether this can be institutionalized and maintained in order to inform the ABS policy arena in terms of implementation. The study showed that the participation of indigenous and local communities was significantly mainstreamed into the work of the CBD through the ABS Working Group. The study further showed that adaptive management occurred within the operational modalities of the ABS working group in order to advance their work.

A polycentric approach is being proposed for future ABS implementation, based on the lessons from the institutional learning. This approach further stresses that the private sector must be allowed to be integrally involved in the implementation of the Protocol, as well as the indigenous and local communities, if implementation is to be effective. The polycentric approach requires the inclusion of all relevant stakeholders to be involved.

It is also further recommended that some of the strategies outlined in this chapter be institutionalized within the CBD and especially in the work of the implementation of the Nagoya Protocol.

Chapter 8 - The Namibian case study addressed the strategic objective of whether the critical factors could be used to track changes within a country. It tested the critical factors, their indicators and the assumptions on the critical factors. It also elucidated how the critical factors themselves could be used to track changes within a country.

The results of the Namibian case study indicates that the critical factors can indeed be used as a comparison within a country to track changes in terms of dealing with ABS over time. The various phases that were assessed based on the critical factors and their indicators, clearly demonstrated a progression over time, as to how the Namibian government has dealt with the issue of ABS.

The indicators derived from the global survey and based on the critical factors, together with the assessment of the effectiveness of Namibia's approach towards ABS implementation over time, provided useful insights and lessons learned that could lead to improvements in the approach that Namibia has taken, both in terms of policy and implementation.

The results of the Namibian case study further confirmed that the evolutionary dynamism of ABS due to internal and external factors in the country, has an impact on the critical factors with regard to implementation at the national level. Political pressure (perceived or real) seems to be a significant factor. More so at the implementation level than at the policy level, since political will and commitment towards ABS has been assured, but has been blocked at

the bureaucratic or technocratic level so that implementation is slowed down. The other external factor also have all been confirmed as having an impact on implementation.

The Namibian case study showed that the internal and external factors indeed had an impact on the critical factors. The study showed that political pressure, commitment and will for instance, can influence administrative efficiency, value addition and information asymmetry, amongst others.

The study also confirmed that the understanding of the definition of the effectiveness of an ABS system is most certainly the same for all parties involved, i.e. both provider and users. Very small variations were observed in terms of differences in understanding regarding the success or definition of effectiveness of an instrument. The empirical results showed that stakeholders view effective implementation of ABS instruments as the ability of that instrument to set incentives to allow for the flow of benefits to both user and provider. This is followed by its ability to set incentives for the sustainable use and conservation of biodiversity. Slight modifications were made to the definition by Richerzhagen (2007). Her definition did not include the fourth bullet - incentives – which would allow for the flow of benefits to both user and providers of genetic resources. Her definition was essentially aimed at considering the effectiveness of the three objectives set by the CBD, or what would be successful, or effective, from the point of view of a provider country versus a user country. The Namibian case study further confirmed this understanding. It was shown to be necessary to manage expectations and eventually to provide benefits as this would become the incentive for conservation.

9.3 LIMITATIONS OF THE STUDY

This section first looks at the general limitation facing research work on ABS and then proceeds to consider the concrete and specific limitations that faced this study.

There is the limitation, as pointed out by Rosenthal (2009 p. 7), that we still need to grapple with, namely the question of who is ultimately responsible for evaluating whether the goal achievement/implementation of ABS legislation in a specific bio-prospecting deal, is a success or a failure. Ideally, we would need to follow the results and impacts of such a deal over a prolonged period of time and conduct broad-based interviews and surveys with all possible and potential stakeholders in order to answer this. Most implementation studies stop at outcomes (i.e. enforcement of policies leading to behaviour change in target groups, e.g. through institutions and budgets established to reach policy goals) rather than studying the effects of the full scope of socioeconomic and ecological impacts of policy decisions (see e.g. Hansenclever et al., 1996; Keohane & Levy, 1996).

There is furthermore the challenge of defining success. Some may view success simply as transactions that lead to real monetary income, whereas it may also be seen as other factors that result from such transactions such as capacity building, technology transfer and incentives for conservation.

It is however important to point out that it is not possible to fully determine outcomes i.e. success in terms of number of contracts (which at this stage seems to be the only measure possible), in terms of benefits or number of access transactions made, in terms of developments or in terms of species saved due to new incentives. The outcomes here simply point to basic, mostly income oriented indicators, such as number of contracts and number of permits.

There is of course the other challenge - that not many deals have been concluded successfully so as to generate a concept of best practice norms for the ABS market. Rosenthal (2009 p. 7) therefore, posits that lack of goal achievement for bio-prospecting deals is likely to result largely from the lack of compatible ABS legislation and measures in user countries. She argues that there is a failure by current international and user-country legal frameworks to ensure full compliance and which must be perceived as a given in any analysis, and which emphasizes the division between international and domestic distributional effects. The benefit sharing part of ABS as a concept has connotations at both levels (Rosenthal, 2009 p. 6).

The next delimitation with regard to general work on ABS, takes cognizance of the fact that there are not many ABS cases. This is because many provider countries have been battling (Kamau and Winter, 2009) with developing, implementing and reviewing their ABS legal and administrative frameworks. The onset of negotiations of an international regime on ABS may further have delated this process for some . The outcome of this limitation is that today we mostly have a significant body of theoretical insight, whilst the same is not true for real, hands-on experience with ABS implementation or regulation of bio-prospecting, informed by time and through time in an adaptive manner. The implication of this situation for this study was that it limited the work in that the number of contracts were so few and they could, therefore, not be used as an indicator for (intermediate) success. It was for this reason that critical factors were derived from literature, as others in the ABS research arena had done previously.

Looking at the concrete and specific limitations that emanated from this study, one has to point out that a significant limitation may rest in the sampling for the international survey on the effectiveness of ABS instruments with a view to develop indicators for the critical factors.

The sampling methodology of taking only participants from ABS working group 6 to Nagoyo has the limitation in that many of the major groups who should have been at the negotiating table - especially industry - may not have been adequately reflected, and that this bias would be reflected towards provider and user countries through their negotiators. It may, therefore, not be possible to obtain a good enough representative sample of research and academia, private sector/industry, civil society and indigenous and local communities. This challenge also reflects on the researcher, since the researcher was also part of that group and the respondents knew the researcher which may have resulted in a non-respondent bias, depending upon their relationship with the researcher. This however, could not be avoided as, on the other hand, it was only with this personal knowledge that it was possible to obtain so many responses for the study.

There was also a serious lack of dialogues between industry and the negotiators, especially for negotiators from provider countries. This, by implication, may mean that such dialogue and meaningful engagement may also not have taken place at the national level. It may further have limitations on the results from the global survey in terms of their ability to fully reflect on the perspective from industry.

Another limitation is that since the principal survey tool was based on electronic media, it may have significantly reduced participation especially by the indigenous and local community (ILC) sector. This limitation could partly have been due to internet connectivity concerns (during the time the survey ran) as well as changes of email addresses during the period from 2006 – 2010, since some participants may have changed sectors, positions and careers. This was however. not such a serious flaw. since the ABS population remained relatively stable throughout the negotiations. For ILC's however. since a small group participated. it was difficult to obtain access to a wider range of ILC representatives through the internet.

The Namibian technical community that was involved in the ABS debate was relatively small if one considers that Namibia's total population is only 2.2 million. This has the effect that the pool from which stakeholders were drawn was and the dynamism of that pool, in terms of change and turnover, was high. The same players moved from government, to private sector, to civil society, to academia, during the course of their active professional lives. This placed a limitation on a study of the perceptions and views of these players, especially if they had to be categorized, as in the case of the Namibian case study. This was a serious limitation since the researcher then had to grapple with the challenge of being an ABS expert himself and trying to report what other experts have put forward.

One of the greatest limitations of the study was the author himself. The author had been a critical player in the ABS policy arena for many years both at the international, regional and national level. This had implications on the objectivity of the study. The limitation was that in an empirical study the ideas and views must come from those interviewed and not the researcher's own ideas. The literature review for the Namibian case study as well as the results from the global survey, helped provide objectivity as a way to address this challenge.

9.4 THEORETICAL AND POLICY IMPLICATIONS

This study used empirical findings to demonstrate a critical need to involve the private sector more in the ABS policy arena, especially so in the implementation of the Nagoya Protocol. It further showed that governments may have to consider the eventuality of working towards the negotiation of a Convention on Technology Transfer.

9.5 OUTLOOK FOR FURTHER RESEARCH

This study took the work of Richerzhagen (2007) further. In her thesis she pointed out that a new focus had been brought into the debate on ABS in terms of addressing effective implementation of the ABS instruments at the domestic and international level. This would foster the move towards achieving the three objectives of the CBD. At the time of her work the negotiations for an international regime were on in all earnest. At the time of writing, the Nagoya Protocol had been in place since 2010 and world governments have been working towards its signing, ratification, accession and eventual full and effective implementation.

Having taken the work of Richerzhagen further and having used the critical factors developed by her as a basis, two new critical factors i.e. Social capital and valorization of biodiversity were added to those of Richerzhagen. In addition indicators were developed for all the critical factors.

The players in the ABS field were not changed since the time that she has completed her work. At the time of writing, a significant amount of literature had been generated on the Nagoya Protocol. What is needed in future is action - guided by a careful design of regulation of and around the Nagoya Protocol. Action is now required in order to see whether the architecture of the Protocol, as designed by the ABS negotiators, will stand the test of time or whether it will render the Protocol useless, impractical and un-implementable.

This current study does not claim to have the all the answers. It simply points the way and much more work needs to be undertaken by those willing and able to continue running with the flame of hope that one day world governments, industry, civil society, research and academia and the local and indigenous communities around the world will effectively implement the provisions of the Nagoya Protocol and domestic ABS instruments leading to

the sustainable use of biodiversity and the generation of benefits, that will be allowed to flow through ABS transactions and off-set conservation.

In section 8.9 of Chapter 8, the material transfer agreements from Namibia were assessed and provided significant insights on actual cases of research for commercial and non-commercial research. This was not an in-depth analysis but simply considered the trends in order to demonstrate that a country can consider itself as being successful in dealing with ABS implementation on the basis that ABS transactions are occurring.

Furthermore, work is now needed to critically revise these contracts and agreements, especially from the perspective of provider countries, to interpret whether real money has been generated. Such a revision would also need to consider other non-monetary benefits and how they are related to successful ABS implementation and the critical factor time lapses up until the generation of benefits, amongst others aspects.

Further work on institutional learning within the multilateral environmental governance systems is warranted. The study on institutional learning merits a full empirical research since the insight of such a study could have significant implications on reforms in the UN in terms of effective implementation of multilateral environmental agreements and conventions.

Further work needs to be undertaken on how countries are implementing ABS and the Nagoya Protocol based on the indicators derived under this study and further refine them if need be.

The issue of private sector involvement requires a more concerted effort as highlighted in this study. Here it has been demonstrated that a polycentric approach towards ABS implementation is critical for the Implementation of the Nagoya Protocol.

The issue of technology transfer also makes itself amenable to further inquiry, in order to better appreciate how it influences the ABS policy arena, especially in terms of success.
Finally, there is a need for further work on organizational learning and adaptive management within the CBD, not only with regard to work on ABS, but also in the other cross-cutting and related areas such as biosafety and Traditional Knowledge, as it relates to article 8(j) of the Nagoya Protocol and its interface with ABS.

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Appendix 1 Questionnaire For The Global Survey On ABS

The purpose of this section is to gather information about the organisation involved in Access and Benefit Sharing (ABS).

For questions 1-5 in this section, you are only required to answer the question relevant to the category of organisation that you belong.

1. Only answer this question if you are a non-governmental organisation.

	National	International
Non-governmental organisation		

Other (please specify)

2. Only answer this question if you are an inter-governmental organisation.

	Specialised agency
Inter-governmental organisation	

Other (please specify)

3. Only answer this question if your organisation is involved with research and academia.

	University	Botanical garden	Museum
Research and Academia			

Other (please specify)

4. Only answer this question if you are with an indigenous and local community organisation.

	Developed country	Developing country
Indigenous and local community		

5. Only answer this question if you are in the private sector.

	Pharmaceutical	Intermediary	Biotechnological	Neutraceutical	Cosmetic
Private sector					

Other (please specify)

6. Name of your country

Effectiveness of ABS policy and legislative instruments

7. Please select the category that best describes your country with regard to biodiversity resources

- Provider
- User
- Both User and Provider

8. Were you an ABS negotiator for the Nagoya Protocol?

- Yes
- No

Effectiveness of ABS policy and legislative instruments

2. Effectiveness of ABS Measures

The purpose of this section is to gather information about your understanding of what ABS measures are supposed to do.

9. To be effective the domestic ABS legal instruments should do the following: (Please tick the appropriate response, note that multiple entries are possible.)

- Set incentives for the sustainable use and conservation of biodiversity
- Set incentives to facilitate access to genetic resources
- Set incentives to allow for the flow of benefits to both user and providers of genetic resources
- Set incentives for the assertion and recognition of rights related to genetic resources and associated Traditional Knowledge
- None of the above
- Do not know

Other (please specify)

Effectiveness of ABS policy and legislative instruments

3. Questions on Good Governance as a Critical Factor for ABS

The purpose of this section is to gather information about the best indicators for good governance structure of a country in terms of its ABS legislation.

Good governance in this context means that both provider countries and user countries have put in place legislative, administrative or policy measures that ensures the academia, private sector and other stakeholders as well as rights holders such as Indigenous and Local Communities have incentives to participate in the ABS market place. This will lead to the generation of benefits for both provider and user country.

10. In your opinion, how important are the following indicators for a good governance structure within a country that seeks to implement an ABS legal instrument?

Indicators

(Good governance structure)

	5=Very Important	4=Important	3=Not important	2=Not important at all	1=Do not know
Political stability prevail in the country	e	e	e	e	e
Political consistency prevail in the country	e	e	e	e	e
A reliable legal system	e	e	e	e	e
A clear policy statement that indicates political will and ability to engage on ABS issues	e	e	e	e	e
A clear statement regarding the ratification/implementation of the ABS Protocol	e	e	e	e	e
Signing and ratification of the Nagoya Protocol by the Government	e	e	e	e	e
A clear policy statement on putting in place a domestic ABS legal, administrative or policy framework	e	e	e	e	e
The process of developing its ABS legislation, administrative or policy measure has been initiated by the country	e	e	e	e	e
Self-interest of the government of the provider for accomplishing ABS agreements	e	e	e	e	e
Clear policies and strategy on ABS at the national level is in place	e	e	e	e	e
Assurance that the user will perform his obligations	e	e	e	e	e

User countries guarantee	€	€	€	€	€

support for measures in provider countries to ensure functionality and effectiveness					
Access to courts for plaintiff from another country is assured	€	€	€	€	€
Upholding the rule of law is guaranteed	€	€	€	€	
For each transaction the relevant legal requirements and costs are clear at the national level		€ €	€	€	
		€	€		
An assurance provided by the ABS framework that the user will comply with the terms of the countries chosen legal vehicle for ABS are clear	€	€	€	€	€
Functional and effective user country measures in place					
Guaranteed equity and equality in terms of transactional assistance for traditional and rural providers of Genetic Resources	€	€	€	€	€
	€	€	€	€	€

11. Can you think of any other indicators for a good governance structure?

Indicator 1

Indicator 2

Indicator 3

Effectiveness of ABS policy and legislative instruments

4. Assigning Property Rights and Intellectual Property

The purpose of this section is to gather information about the best indicators for how a ABS instrument is assigning Property Rights and Intellectual Property.

This refers to how property rights are assigned in a provider/user countries domestic legislation in terms of who owns the genetic resources and how this ownership right enables that person/s to use, sell, transfer or exchange genetic resources and/or exclude others from doing these things.

The assignment of Intellectual Property Rights (IPR) refers to how IPR is assigned in a provider/user countries domestic legislation in the context of ABS.

12. In your opinion how important are the following indicators for indicating how a country is assigning property and intellectual property rights necessary for the effective implementation of an ABS legal instrument. (Please tick the appropriate box below)

Indicators

(Assignment of property and IPR)

	5=Very Important	4=Important	3=Not important	2=Not very Important	1=Do not know
Clear rules as to which resources and rights require permission or payment	e	e	e	e	e
Clear rules as to how shared genetic resources will be treated	e	e	e	e	e
Clear rules to ensure that private property rights are respected	e	e	e	e	e
Clear rules on how the transfer of genetic resources to third parties will be handled	e	e	e	e	e
Clear rules on the roles and responsibility of both users and providers with regard to the above rights	e	e	e	e	e
Clear rules for disclosure requirements	e	e	e	e	e
Clear rules to ensure that confidentiality issues are taken into account by users and providers	e	e	e	e	e
Basic commercial and administrative rights are clearly defined	e	e	e	e	e
Clear rules on who has the right to give access	e	e	e	e	e
Clear rules on who can issue Prior Informed	e	e	e	e	e

Consent

13. Can you think of any other indicators for assigning property rights?

Indicator 1

Indicator 2

Indicator 3

Effectiveness of ABS policy and legislative instruments

5. Administrative Procedures/Complexity

The purpose of this section is to gather information about the best indicators for the administrative complexity or procedures of an ABS system.

In this context administrative procedures and complexity refers to how easy it is for a researcher/investor/user to understand and apply for an access agreement for Research and Development (R&D) in bio-prospecting in any given provider country. This also includes the transaction costs that the researcher/investor/ user have to incure. In other words are the procedures to bureaucratic or not in terms of practical implementation of the ABS legal instrument.

14. In your opinion how important are the following indicators below for an effective and non complex administrative structure necessary to implement an ABS legal instrument (Please tick the appropriate box below)

Indicators

(Administrative Complexity)

	5=Very Important	4=Important	3=Not important	2=Not very Important	1=Do not know
A clear, simple and functional institutional framework is in place	e	e	e	e	e
The National Competent Authority for granting access is established	e	e	e	e	e
A national ABS multi-sectoral Committee/Council is in place	e	e	e	e	e
It is clear what processes one must go through at the national level in order to acquire the resources and rights one desires	e	e	e	e	e
A one stop shop for all permits, and other requirements has been established	e	e	e	e	e
Only one permit is required	e	e	e	e	e
Clear competencies of actors for access negotiators	e	e	e	e	e
The National ABS Focal Point is established	e	e	e	e	e
There is a clear framework for stakeholder identification to facilitate effective implementation	e	e	e	e	e
Availability of information about the national system for access and use of genetic resources	e	e	e	e	e

Effectiveness of ABS policy and legislative instruments

Centrally managed access procedures for genetic resources	e	e	e	e	e
Competent contact partner in provider country is established and is reachable	e	e	e	e	e
There are clear rules, guidelines and information on procedures for Prior Informed Consent (PIC), Mutually Agreed Terms (MAT) and Material Transfer Agreements (MTAs) for applicants seeking access to genetic resources	e	e	e	e	e
There is a manual of the ABS process at the national level	e	e	e	e	e
There is a guidance manual for the national ABS law, administrative or policy measure	e	e	e	e	e
There are clear rules, guidelines and information on procedures for PIC, MAT and MTAs for applicants seeking access to traditional knowledge associated with genetic resources	e	e	e	e	e
There are clear rules, guidelines and information on procedures for benefit-sharing	e	e	e	e	e
There are clear rules and/or processes for the involvement of the Indigenous and Local Communities for access to genetic resources and associated traditional knowledge	e	e	e	e	e
Decision-making on ABS application is decentralized and clear authority for decision making is given to lower	e	e	e	e	e
Model contractual clauses to ensure voluntary codes of conduct, guidelines and	e	e	e	e	e

best practices and/or standards for access and benefit-sharing are being used					
The international recognized certificate is being used					
Tools to monitor compliance are there and not complex					
Check points are established					
The fee structure is clear and transparent					
Grounds on which access can be denied or revoked should be mentioned and enforced in a transparent manner					
Access authorities should make available information that is used as a basis for decision making and price setting to the public					
A rights to appeal is provided for in cases access is denied for reasons that the firm/users did not intend or cannot change					
There is no confusion and uncertainty regarding the administrative rules and their implementation					
A clear time frame is provided of the time needed to reach the decision whether to grant access for non-commercial research					
A clear time frame is provided of the time needed to reach the decision whether to grant access for commercial research					
A clear time frame is provided of the time needed to reach a decision on PIC, MAT and					

Effectiveness of ABS policy and legislative instruments

15. Can you think of any other indicators for administrative procedures/complexity?

Indicator 1

Indicator 2

Indicator 3

Effectiveness of ABS policy and legislative instruments

6. Time Lags/ Timeline to Benefit-Sharing

The purpose of this section is to gather information about the best indicators for the time lags between the collection of samples and generation of benefits.

In this context time lags refer to the fact that if the time lag between the collection and provision of samples and the development of a marketable product is accounted for by adequate and appropriate benefits. In other words how long does it take from the collection of materials to the generation of the first product and thus the first benefits

16. In your opinion how important are the following indicators below for showing how a country is effectively addressing the issue of time lags to benefit-sharing to ensure effective implementation of its ABS legal instrument (Please tick the appropriate box below)

Indicators
(Time lags)

	5=Very Important	4=Important	3=Not very important	2=Not at all important	1=Do not know
Mechanisms are in place to ensure that benefits are allocated for biodiversity conservation measures					
Mechanisms in place at national level to ensure that short term benefits do not overrule long term benefits					
A national bioprospecting fund or similar mechanisms into which a share of the benefits is deposited at the national level					
A national strategy in place for the application of technology, skills and expertise transferred as benefits under ABS deals					
A strategy in place for building capacity for negotiating ABS contracts (PIC, MAT and appropriate benefit-sharing)					
National and regional strategies in place to promote use of biodiversity for value creation and economic development					
Clear understanding at the national level of the value chain of genetic resource in the ABS pipeline and the implications for benefit-sharing					
A strategy for building capacities of negotiating skills for communities					
Checkpoints are established to ensure the transparency of the value chain through which the genetic resources is going to ensure appropriate benefit-sharing					
Number of contracts negotiated under the ABS regime					

Amount of benefits registered as a result of the ABS regime	e	e	e	e	e
Total contribution of bio-prospecting activities to the national budget	e	e	e	e	e
Total contribution of bio-prospecting activities to biodiversity conservation and education	e	e	e	e	e
Clear rules and guidelines for how monetary and non-monetary benefits will be shared	e	e	e	e	e
Number of nationals trained under ABS agreements	e	e	e	e	e
Clear rules for scientific, technical and research co-operation	e	e	e	e	e
Assistance for the development of appropriate adaptation of relevant foreign technologies	e	e	e	e	e

17. Can you think of any other indicators for time lags?

Indicator 1

Indicator 2

Indicator 3

Effectiveness of ABS policy and legislative instruments

7. Information Asymmetries

The purpose of this section is to gather information about the best indicators as to how an ABS instrument deals with information asymmetry amongst partners in ABS transactions.

Information asymmetry refers to the imbalance of information in negotiations and transactions of ABS agreements because one party has more or better information than the other. This imbalance can result in the transaction being influenced negatively and can result in the contract or agreement not being entered into.

The problem of uncertain product quality in the market for traditional knowledge-related information and tangible genetic resources where the quality of genetic resources samples or the reliability of the traditional knowledge-based information or both can only be verified after the good has been traded, leads to problems of information asymmetries and in extreme cases, to a breakdown of market exchange.

Effectiveness of ABS policy and legislative instruments

18. In your opinion how important are the following indicators below for showing how a country is effectively addressing information asymmetry in order to ensure effective implementation of its ABS legal instrument (Please tick the appropriate box below)

Indicators

(Information Asymmetry)

	5=Very Important	4=Important	3=Not important	2=Not very important	1=Do not know
A national ABS Clearing House Mechanism is in place	e	e	e	e	e
An ABS National Advisory Council/Committee with multi-disciplinary and multi-stakeholder representation in place	e	e	e	e	e
A functional and effective Communication Education and Public Awareness Initiative on ABS in place at national level	e	e	e	e	e
Rules and guidelines to ensure that functional and effective communication process at the national level are clear	e	e	e	e	e
Clear rules, guidelines and process for dealing with traditional knowledge (TK) are in place	e	e	e	e	e
Measures are in place to reduce potential negotiating and other inequalities between stakeholders	e	e	e	e	e
A clear policy and understanding of technology transfer at national level	e	e	e	e	e
There is a clear policy on science, research and technology and its role in national and economic development	e	e	e	e	e
A national strategy for awareness raising on the value of Traditional Knowledge associated with genetic resources in place	e	e	e	e	e
Definition of the concept of Genetic Resource as	e	e	e	e	e

Protocol is understood by all players					
The definition of the concept of the utilization of genetic resources as provided for in the Nagoya	€	€	€	€	€
Protocol is understood by all players					

19. Can you think of any other indicators for information asymmetry?

Indicator 1

Indicator 2

Indicator 3

Effectiveness of ABS policy and legislative instruments

8. Market Structure

The purpose of this section is to gather information about the ABS market and the best indicators for the ABS market and market structure as it relates to ABS legal instruments.

In this context market structure means that all relevant stakeholders especially the private sector and the regulators understand the characteristics of the market and the demand and supply forces in the bio-prospecting market that prevails in a provider/user country. It also assumes that there is a well functioning market for biodiversity uses within the provider country.

20. Can you please indicate below according to your view the kind of companies that are approaching countries for ABS related transactions? (Multiple entries are possible).

- Intermediary
- Biotechnological
- Nutraceutical
- Pharmaceutical
- Cosmetic and Personal Care
- Plant breeding and seed industry
- Phytomedicine
- All the above
- Do not know
- Other

Other (please specify)

Effectiveness of ABS policy and legislative instruments

21. In your opinion how important are the following indicators below for understanding the ABS market structure inside a country that seeks to implement and effective ABS legal instrument (Please tick the appropriate box below)

Indicators

(Market Structure)

	5=Very Important	4=Important	3=Not important	2=Not very important	1=Do not know
Measures are in place to resolve the issues relating to the nature of market demand for traditional knowledge	e	e	e	e	e
Measures are in place to resolve the cultural and social complexities and equity issues relevant to the ABS market at national level	e	e	e	e	e
Domestic public and private institutions are adding value to Genetic Resources	e	e	e	e	e
Measures are in place to allow investors to assess the commercial risks and opportunities in a country	e	e	e	e	e
Market opportunities in relevant sectors are identified and fed into the national ABS strategy of the provider or user country	e	e	e	e	e
Provider has a concept for resource evaluation	e	e	e	e	e
Pro-active policy and approach towards the private sector and investors interested to invest in the bio-prospecting market at the local level	e	e	e	e	e
The search and information costs in the market for bio-prospecting is low	e	e	e	e	e
Bargaining occurs under	e	e	e	e	e
There are public and	e	e	e	e	e

private sector incentives for undertaking Bio-prospecting					
The bargaining and decision- making costs in the market for bio-prospecting are low	e	e	e	e	e
The monitoring and enforcement costs in the market for bio-prospecting are low	e	e	e	e	e

22. Can you think of any other indicators for market structure?

Indicator 1

Indicator 2

Indicator 3

Effectiveness of ABS policy and legislative instruments

9. Valorization of Biodiversity

The purpose of this section is to gather information about the best indicators for valorization strategy as part of a country's efforts to effectively deal with ABS legal instruments.

In this context the valorization of biodiversity refers to the development of valorization strategies at the national level especially in provider countries that can help add value to their biodiversity as it goes up the value chain in country and to the market.

23. In your opinion how important are the following indicators below for showing how a country is doing in terms of a valorization strategy as part of implementing an effective ABS legal instrument (Please tick the appropriate box below)

Indicators

(Valorization of biodiversity)

	5=Very Important	4=Important	3=Not important	2=Not very important	1=Do not know
A national strategy for the promotion of the use of biodiversity for value creation and economic development is in place	e	e	e	e	e
Existence of potential research partners in the provider country are made public	e	e	e	e	e
Domestic public and private institutions are involved in the identification of the commercial value of biodiversity	e	e	e	e	e
An investment centre at national level which has information or database on the species of interest and with potential for value addition	e	e	e	e	e
A list of species with potential interest for investor and the stages of research at which they are in terms of R&D	e	e	e	e	e
Efficient biodiversity infrastructure at domestic levels for inventories of genetic resources and traditional knowledge are in place	e	e	e	e	e
A clear national process for identification market opportunities in relevant sectors of importance to	e	e	e	e	e

ABS is in place					
A data base covering the economic valuation information is in place					
A national strategy for the promotion of the use of biodiversity for value creation and economic development					
A strategy in place to ensure that the stages of collection of plant material, screening, and advanced screening, advanced research and development are all conducted with reputably and quality of cooperation					
A national programme to validate the importance of ethno-botanical knowledge for modern medicinal research in order to capitalise on the economic value is in place					
Economic valuation methods for valuing biodiversity with potential for ABS are being used					
Clear rules and guidelines how the economic valuation will contribute to deciding on ABS permits					

24. Can you think of any other indicators for valorisation of biodiversity?

Indicator 1

Indicator 2

Indicator 3

Effectiveness of ABS policy and legislative instruments

10. Social Capital

The purpose of this section is to gather information about the best indicators for showing how a country is working towards building trust between ABS stakeholders.

In this context social capital will refer to 'trust building' between the players in the ABS sector. The Nagoya

Protocol provide an international framework that is meant to provide the rules of the game for both user and providers and through that contributes to legal certainty, clarity and transparency. Domestic ABS legal instruments are supposed to do the same at the national level. This is essentially asking for trust between the players in the ABS game.

25. In your opinion how important are the following indicators below for showing that a country is working towards building trust between stakeholders to ensure that ABS transactions contributes to effective implementation of its ABS legal instrument (Please tick the appropriate box below)

Indicators

(Social Capital)

	5=Very Important	4=Important	3=Not important	2=Not very important	1=Do not know
Mechanisms to signal the quality of genetic resources to potential bio-prospectors are in place	○	○	○	○	○
A valorization strategy is in place	○	○	○	○	○
An effective, transparent legal, policy and administrative ABS domestic framework is in place	○	○	○	○	○
Effective administrative procedures in place	○	○	○	○	○
Measures are in place that deal with addressing information asymmetry	○	○	○	○	○
A good governance structure in place at the national level	○	○	○	○	○
A 'Black List' of those firms and organizations that contribute to bio-piracy is in place (including the end pharmaceutical companies who buy such genetic resources from intermediaries)	○	○	○	○	○
The internationally	○	○	○	○	○

recognized certificate is being used					
Creation of reputable networks of research collaborators with best practice codes					
Measures to ensure that the stages of collection of plant material, screening, and advanced screening, advanced research and development are all conducted with reputation and quality of cooperation					

26. Can you think of any other indicators for social capital?

Indicator 1

Indicator 2

Indicator 3

Effectiveness of ABS policy and legislative instruments

11. Impact of External and Internal Factors on Critical Factors

The purpose of this section is to gather information about whether external and internal factors in a country has an impact on the critical factors used in this study. Please note that Question 27 is focussing on factors at the **National level** whereas Question 28 is focussing on factors at the **International level**.

27. Please indicate which critical factors are important for the effective implementation of the Nagoya Protocol at the National levels.

	5=Very Important	4=Important	3=Not Important	2=Not Very Important	1=Do Not Know
Good governance structure	e C	e C	e C	e C	e C
Assignment of property rights and intellectual property	e	e	e	e	e
Administrative procedures/complexity	e C	e C	e C	e C	e C
Time lags/timeline to benefits	e	e	e	e	e
Information asymmetry	e	e	e	e	e
Market structure	e	e	e	e	e
Valorization of biodiversity	e	e	e	e	e
Social capital	e	e	e	e	e

28. Please indicate which critical factors are important for the effective implementation of the Nagoya Protocol at the International levels.

	5=Very Important	4=Important	3=Not Important	2=Not Very Important	1=Do Not Know
Good governance structure	e C	e C	e C	e C	e C
Assignment of property rights and intellectual property	e	e	e	e	e
Administrative procedures/complexity	e C	e C	e C	e C	e C
Time lags/timeline to benefits	e	e	e	e	e
Information asymmetry	e	e	e	e	e
Market structure	e	e	e	e	e
Valorization of biodiversity	e	e	e	e	e
Social capital	e	e	e	e	e

29. In your opinion to what extent do the following factors impact on the critical factors (*Good governance, Assigning Property Rights and Intellectual Property, Administrative Procedures/Complexity, Time Lags/ Timeline to Benefit-Sharing, Information Asymmetries, Market Structure, Valorization of Biodiversity, Social Capital*)? Please tick the appropriate box Internal and External factors that may impact on critical factors

	5=Significant impact	4=Moderate impact	3=Very low impact	2=No Impact	1=Do not know
Political Pressures	e	e	e	e	e
Changing demand levels	e	e	e	e	e
New scientific findings	e	e	e	e	e
Technology innovations	e	e	e	e	e
Change in legal frameworks	e	e	e	e	e
Criticism from NGOs	e	e	e	e	e
Criticism from media	e	e	e	e	e
Criticism from government	e	e	e	e	e
Criticism from private sector/industry	e	e	e	e	e
Special circumstance at national level	e	e	e	e	e

30. Can you think of any other critical factors?

Factor 1

Factor 2

Factor 3

31. Any other comments or observations on ABS?

5

6

Appendix 2 Factor Analysis Results For Good Governance Structure In Both Provider And User Countries

Table 1: Communalities

Communalities

	Initial
Political stability prevail in the country	1.000
Political consistency prevail in the country	1.000
A reliable legal system	1.000
A clear policy statement that indicates political will and ability to engage on ABS issues	1.000
A clear statement regarding the ratification/implementation of the ABS Protocol	1.000
Signing and ratification of the Nagoya Protocol by the Government	1.000
A clear policy statement on putting in place a domestic ABS legal, adminstrative or policy framework	1.000
The process of developing its ABS legislation, administrative or policy measure has been initiated by the country	1.000
Self-interest of the government of the provider for accomplishing ABS agreements	1.000
Clear policies and strategy on ABS at the national level is in place	1.000
Assurance that the user will perform his obligations	1.000
Access to courts for plaintiff from another country is assured	1.000
Upholding the rule of law is guaranteed	1.000
User countries guarantee support for measures in provider countries to ensure functionality and effectiveness	1.000
For each transaction the relevant legal requirements and costs are clear at the national level	1.000
An assurance provided by the ABS framework that the user will comply with the terms of the countries chosen legal vehicle for ABS are clear.	1.000
Functional and effective user country measure in place	1.000
Guaranteed equity and equality in terms of transactional assistance for traditional and rural providers of Genetic Resources	1.000

Extraction Method: Principal Component Analysis.

Table 2: Total Variance Explained

Total Variance Explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.595	25.528	25.528	2.344	13.020	13.020
2	2.039	11.328	36.856	1.989	11.049	24.069
3	1.670	9.276	46.132	1.799	9.996	34.065
4	1.600	8.888	55.020	1.677	9.319	43.384
5	1.123	6.241	61.261	1.591	8.840	52.223
6	1.083	6.019	67.280	1.556	8.642	60.866
7	.882	4.901	72.181	1.503	8.350	69.216
8	.782	4.344	76.525	1.316	7.309	76.525
9	.680	3.777	80.302			
10	.603	3.352	83.653			
11	.547	3.041	86.695			
12	.449	2.493	89.188			
13	.438	2.435	91.623			
14	.386	2.146	93.769			
15	.377	2.093	95.862			
16	.289	1.604	97.466			
17	.240	1.334	98.800			
18	.216	1.200	100.000			

Extraction Method: Principal Component Analysis.

Table 3: Rotated Component Matrix

Rotated Component Matrix[a]

	Component							
	1	2	3	4	5	6	7	8
Political stability prevail in the country	.055	-.104	-.095	-.045	.301	.083	.073	-.040
Political consistency prevail in the country	.155	.201	.178	.280	.782	-.084	.023	-.007
A reliable legal system	-.017	-.095	.279	.649	.170	.222	.310	.236
A clear policy statement that indicates political will and ability to engage on ABS issues	.852	.007	.219	.085	.050	.187	-.067	-.137
A clear statement regarding the ratification/implementation of the ABS Protocol	.577	.215	-.060	.070	-.002	.635	-.112	-.034
Signing and ratification of the Nagoya Protocol by the Government	.136	.073	.217	-.057	.020	.872	.058	.077
A clear policy statement on putting in place a domestic ABS legal, administrative or policy framework	.250	.057	.512	.378	-.201	.083	-.423	-.103
The process of developing its ABS legislation, administrative or policy measure has been initiated by the country	.045	.057	.835	-.032	-.023	.183	.111	.155
Self-interest of the government of the provider for accomplishing ABS agreements	.714	.222	.093	.001	.215	-.083	.187	.248
Clear policies and strategy on ABS at the national level is in place	.192	.116	.681	.254	.144	-.015	.121	.194
Assurance that the user will perform his obligations	.115	.055	.240	.145	-.045	.024	-.094	.885
Access to courts for plaintiff from another country is assured	-.025	.444	.001	.168	-.042	.288	.654	.154
Upholding the rule of law is guaranteed	.118	-.006	.190	.253	.108	-.119	.757	-.171
User countries guarantee support for measures in provider countries to ensure functionality and effectiveness	.174	.594	.118	-.093	-.047	.206	.186	.472
For each transaction the relevant legal requirements and costs are clear at the national level	.127	.085	.046	.866	.077	-.124	.125	.023
An assurance provided by the ABS framework that the user will comply with the terms of the countries chosen legal vehicle for ABS are clear	.217	.768	-.056	.241	.049	.233	-.176	-.055
Functional and effective user country measure in place	.194	.769	.189	-.108	.040	-.106	.220	.039
Guaranteed equity and equality in terms of transactional assistance for traditional and rural providers of Genetic Resources	.685	.256	.048	.039	.025	.159	.035	.186

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 10 iterations.

Table 4: Component Transformation Matrix

Component Transformation Matrix

Component	1	2	3	4	5	6	7	8
1	.563	.454	.396	.311	.167	.305	.193	.254
2	-.303	-.256	.213	.508	.450	-.380	.440	.004
3	.278	.219	-.579	-.169	.606	-.046	.138	-.349
4	.414	-.547	.181	.235	.211	.054	-.558	-.289
5	-.212	-.377	.127	-.318	.292	.730	.272	.057
6	-.049	.018	-.237	.512	-.413	.374	.251	-.552
7	-.336	.142	-.398	.439	.219	.281	-.448	.435
8	-.427	.468	.447	-.079	.231	.069	-.319	-.483

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Appendix 3 Factor Analysis Results Assigning Propoerty Rights And Intellectual Property Rights

Table 1: Communalities

Communalities

	Initial
Clear rules as to which resources and rights require permission or payment	1.000
Clear rules as to how shared genetic resources will be treated	1.000
Clear rules to ensure that private property rights are respected	1.000
Clear rules on how the transfer of genetic resources to third parties will be handled	1.000
Clear rules on the roles and responsibility of both user and providers with regard to the above rights	1.000
Clear rules for disclosure requirements	1.000
Clear rules to ensure that confidentiality issues are taken into account by users and providers	1.000
Basic commercial and administrative rights are clearly defined	1.000
Clear rules on who has the right to give access	1.000
Clear rules on who can issue Prior informed Consent	1.000

Extraction Method: Principal Component Analysis.

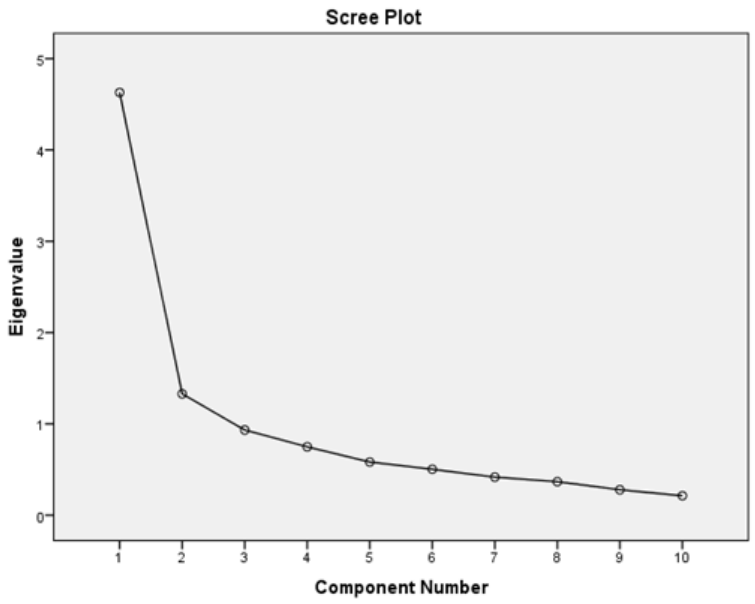
Table 2: Total Variance Explained

Total Variance Explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.629	46.294	46.294	2.108	21.084	21.084
2	1.329	13.287	59.581	1.754	17.536	38.620
3	.933	9.330	68.911	1.690	16.900	55.520
4	.749	7.489	76.399	1.455	14.550	70.070
5	.582	5.822	82.221	1.215	12.151	82.221
6	.503	5.032	87.253			
7	.417	4.168	91.421			
8	.366	3.663	95.084			
9	.279	2.786	97.870			
10	.213	2.130	100.000			

Extraction Method: Principal Component Analysis.

Table 3



Component Matrix[a]

a. 5 components extracted.

Table 4: Rotated Component Matrix

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
Clear rules as to which resources and rights require permission or payment	.324	.143	.799	.113	.116
Clear rules as to how shared genetic resources will be treated	.314	.202	.741	.119	.240
Clear rules to ensure that private property rights are respected	.013	.213	.230	.874	.015
Clear rules on how the transfer of genetic resources to third parties will be handled	.491	.597	-.008	-.038	.460
Clear rules on the roles and responsibility of both user and providers with regard to the above rights	.000	.262	.342	.203	.841
Clear rules for disclosure requirements	.307	.644	.215	.215	.283
Clear rules to ensure that confidentiality issues are taken into account by users and providers	.422	.117	-.055	.707	.364
Basic commercial and administrative rights are clearly defined	-.043	.878	.181	.201	.067
Clear rules on who has the right to give access	.834	.138	.353	.128	-.016
Clear rules on who can issue Prior informed Consent	.833	.064	.357	.138	.090

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 7 iterations.

Table 5: Component Transfomation Matrix

Component Transformation Matrix

Component	1	2	3	4	5
1	.541	.466	.477	.361	.364
2	-.624	.540	-.321	.328	.329
3	.033	-.432	-.115	.870	-.207
4	-.562	-.213	.798	.028	.034
5	-.040	.508	.140	.072	-.846

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Appendix 4 Factor Analysis Results Effective, Functional And Non-Complex Administrative Structure/Framework Is In Place

Table 1: Principle component analysis

Communalities	Initial
A clear, simple and functional institutional framework is in place	1.000
The National Competent Authority for granting access is established	1.000
A national ABS Multi-sectoral Committee/Council is in place	1.000
It is clear what processes one must go through at the national level in order to acquire the resources and rights one desires	1.000
A one stop shop for all permits, and other requirements has been established	1.000
Only one permit is required	1.000
Clear competencies of actors for access negotiators	1.000
The National ABS Focal Point is established	1.000
There is a clear framework for stakeholder identification to facilitate effective implementation	1.000
Availability of information about the national system for access and use of genetic resources	1.000
Centrally managed access procedure for genetic resources	1.000
Competent contact partner in provider country is established and is reachable	1.000
There are clear rules, guidelines and information on procedures for PIC, MAT and Material Transfer Agreements for applicants seeking access to genetic resources	1.000
There is a manual of the ABS process at the national level	1.000
There is a guidance manual for the national ABS law, administrative or policy measure	1.000
There are clear rules, guidelines and information on procedures for PIC, MAT and MTAs for applicants seeking access to TK associated with genetic resources	1.000
There are clear rules, guidelines and information on procedures for benefit-sharing	1.000
There are clear rules and/or processes for the involvement of the ILC for access to genetic resources and associated TK	1.000
Decision-making on ABS application is decentralized and clear authority for decision making is given to lower levels	1.000

Model sectoral and cross-sectoral contractual causes are being used	1.000
Model contractual clauses to ensure voluntary codes of conduct guidelines and best practices and/or standards for access and benefit-sharing are being used	1.000
The international recognized certificate is being used	1.000
Tools to monitor compliance are there and not complex	1.000
Check points are established	1.000
The fee structure is clear and transparent	1.000
Grounds on which access can be denied or revoked should be mentioned and enforced in a transparent manner	1.000
Access authorities should make available information that is used as a basis for decision making and price setting to the public	1.000
A rights to appeal is provided for in cases access is denied for reasons that the firm/users did not intend or cannot change	1.000
There is no confusion and uncertainty regarding the administrative rules and their implementation	1.000
A clear time frame is provided of the time needed to reach the decision whether to grant access for non-commercial research	1.000
A clear time frame is provided of the time needed to reach the decision whether to grant access for commercial research	1.000
A clear time frame is provided of the time needed to reach a decision on the PIC, MAT and benefit-sharing agreement	1.000

Extraction Method: Principal Component Analysis.

Table 2: Total Variance Explained

Component	Initial Eigenvalues			Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.354	29.232	29.232	4.057	12.680	12.680
2	4.055	12.671	41.903	3.732	11.661	24.341
3	2.421	7.567	49.469	3.494	10.917	35.258
4	2.258	7.055	56.524	3.092	9.661	44.919
5	2.084	6.513	63.037	2.659	8.311	53.230
6	1.606	5.020	68.057	2.332	7.288	60.518
7	1.181	3.690	71.747	1.843	5.759	66.277
8	1.093	3.416	75.163	1.663	5.196	71.473
9	1.015	3.172	78.335	1.636	5.112	76.585
10	.962	3.005	81.340	1.522	4.755	81.340
11	.830	2.595	83.935			
12	.693	2.167	86.102			
13	.588	1.838	87.940			
14	.513	1.603	89.543			
15	.501	1.565	91.109			
16	.429	1.340	92.448			
17	.401	1.254	93.702			
18	.337	1.054	94.756			
19	.327	1.023	95.779			
20	.226	.706	96.485			
21	.201	.627	97.112			
22	.177	.553	97.665			
23	.171	.534	98.199			
24	.161	.503	98.702			
25	.117	.365	99.067			
26	.088	.276	99.343			
27	.069	.216	99.559			
28	.055	.173	99.732			
29	.040	.126	99.858			
30	.022	.069	99.928			
31	.015	.047	99.975			
32	.008	.025	100.000			

Extraction Method: Principal Component Analysis.

Figure 3: Scree Plot for factor extraction

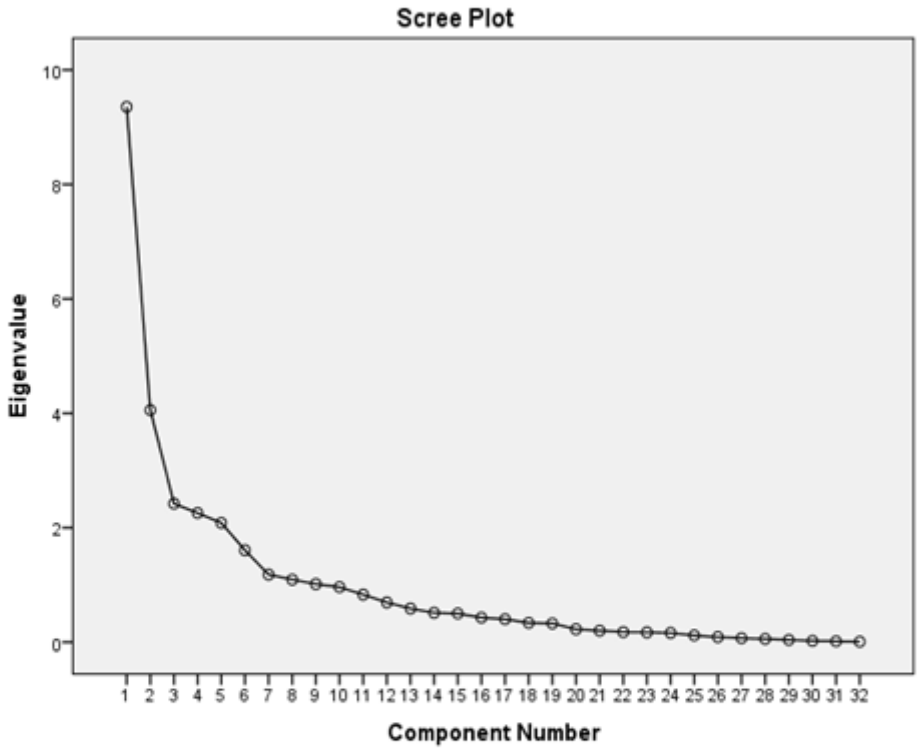


Table 4: Component matrix indicating number of factors extracted

Component Matrix[a]

a. 10 components extracted.

Table 5: Rotated Component Matrix

Rotated Component Matrix[a]

	Component									
	1	2	3	4	5	6	7	8	9	10
A clear, simple and functional institutional framework is in place	-.094	.467	.053	.078	-.020	-.399	.058	.403	.075	-.095
The National Competent Authority for granting access is established	.179	.897	.156	.004	.074	.034	.068	.013	.126	.058
A national ABS Multi-sectoral Committee/Council is in place	.658	.284	.091	.096	-.081	.422	.010	.020	.086	.178
It is clear what processes one must go through at the national level in order to acquire the resources and rights one desires	-.142	.756	.248	-.029	.010	.179	.127	.079	.029	.240
A one stop shop for all permits, and other requirements has been established	.574	.071	.017	.156	.572	-.034	.003	.222	-.001	.018
Only one permit is required	.139	.110	.171	-.060	.792	.009	-.177	-.031	-.014	.155
Clear competencies of actors for access negotiators	.098	.571	-.161	.648	-.079	.072	.011	.005	-.145	-.122
The National ABS Focal Point is established	.503	.359	-.052	.066	.315	.106	.200	.072	-.362	.394
There is a clear framework for stakeholder identification to facilitate effective implementation	.272	-.051	.248	.707	.258	.168	-.193	.207	.074	.196
Availability of information about the national system for access and use of genetic resources	-.133	.165	.102	.108	.014	.022	.114	.189	.120	.810
Centrally managed access procedure for genetic resources	.603	-.169	-.170	.199	.301	.244	-.182	-.108	.415	.120
Competent contact partner in provider country is established and is reachable	.085	.236	.269	.682	-.012	.384	-.005	-.259	.202	.176
There are clear rules, guidelines and information on procedures for PIC, MAT and Material Transfer Agreements for applicants seeking access to genetic resources	.107	.738	.295	.062	.054	.060	.364	.047	.128	.101
There is a manual of the ABS process at the national level	.713	-.030	.432	-.121	.206	.212	-.065	.082	-.036	-.167
There is a guidance manual for the national ABS law, administrative or policy measure	.746	-.046	.328	.179	-.021	.307	.000	.088	-.023	-.063
There are clear rules, guidelines and information on procedures for PIC, MAT and MTAs for applicants seeking access to TK associated with genetic resources	-.035	.409	.095	.254	.066	.117	.632	.122	.294	.105
There are clear rules, guidelines and information on procedures for benefit-sharing	.181	-.128	-.175	.713	.083	.110	.239	.386	.145	.082
There are clear rules and/or processes for the involvement of the ILC for access to genetic resources and associated TK	.103	.174	.210	.089	.041	.147	.027	.209	.852	.091
Decision-making on ABS application is decentralized and clear authority for decision making is given to lower levels	.789	.029	.070	.249	.214	-.083	.102	-.137	.166	-.091
Model sectoral and cross-sectoral contractual causes are being used	.087	.227	.219	.349	.122	.811	.026	.029	.120	.038
Model contractual clauses to ensure voluntary codes of conduct guidelines and best practices and/or standards for access and benefit-sharing are being used	.379	.056	.136	.122	-.050	.797	.115	.062	.089	-.046
The international recognized certificate is being used	.162	-.115	.060	.435	.720	-.062	.208	.003	.079	.054
Tools to monitor compliance are there and not complex	-.041	.180	.096	.043	.122	.055	-.177	.790	.206	.284
Check points are established	.229	.285	.480	.059	.274	-.027	.045	.176	.420	.355
The fee structure is clear and transparent	.270	.167	.625	.086	.029	.140	.252	.363	.152	.179
Grounds on which access can be denied or revoked should be mentioned and enforced in a transparent manner	.069	.222	.027	-.061	.006	.032	.868	-.148	-.119	.061
Access authorities should make available information that is used as a basis for decision making and price setting to the public	.604	.119	-.339	.208	.349	.016	.217	-.209	-.063	-.225
A rights to appeal is provided for in cases access is denied for reasons that the firm/users did not intend or cannot change	.128	.122	.304	.005	.662	.172	.184	.186	.122	-.309
There is no confusion and uncertainty regarding the administrative rules and their implementation	.059	.544	.312	.048	.266	.349	.261	.345	-.151	-.035
A clear time frame is provided of the time needed to reach the decision whether to grant access for non-commercial research	.040	.265	.808	.247	.184	.117	.030	-.027	.063	.085
A clear time frame is provided of the time needed to reach the decision whether to grant access for commercial research	.061	.229	.876	-.019	.116	.126	-.022	.017	.104	-.010
A clear time frame is provided of the time needed to reach a decision on the PIC, MAT and benefit-sharing agreement	.220	.028	.518	.681	.144	.099	.045	-.163	-.037	-.074

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 13 iterations.

Table 6: Component Transformation Matrix

Component Transformation Matrix

Component	1	2	3	4	5	6	7	8	9	10
1	.458	.405	.429	.367	.321	.318	.172	.154	.181	.135
2	-.587	.583	.265	-.210	-.250	-.090	.204	.202	.059	.210
3	.183	.440	-.574	.109	-.037	-.061	.503	-.225	-.328	-.124
4	.233	.102	.162	-.662	.527	-.382	.054	.081	-.150	-.124
5	-.205	-.052	-.366	.376	.433	-.447	-.015	.395	.207	.307
6	.380	.083	-.405	-.417	-.292	.233	-.122	.381	.304	.345
7	-.058	-.377	.050	-.136	.009	.017	.729	-.110	.536	-.048
8	.266	.258	.067	.131	-.330	-.561	-.207	-.151	.480	-.349
9	-.116	.005	-.089	.041	.006	.210	.050	.625	-.002	-.735
10	.290	-.272	.278	.138	-.417	-.359	.286	.390	-.425	.173

Extraction Method: Principal Component Analysis.

Table 7: Component Transformation Matrix

Component Transformation Matrix

Component	1	2	3	4	5	6	7	8	9	10
1	.458	.405	.429	.367	.321	.318	.172	.154	.181	.135
2	-.587	.583	.265	-.210	-.250	-.090	.204	.202	.059	.210
3	.183	.440	-.574	.109	-.037	-.061	.503	-.225	-.328	-.124
4	.233	.102	.162	-.662	.527	-.382	.054	.081	-.150	-.124
5	-.205	-.052	-.366	.376	.433	-.447	-.015	.395	.207	.307
6	.380	.083	-.405	-.417	-.292	.233	-.122	.381	.304	.345
7	-.058	-.377	.050	-.136	.009	.017	.729	-.110	.536	-.048
8	.266	.258	.067	.131	-.330	-.561	-.207	-.151	.480	-.349
9	-.116	.005	-.089	.041	.006	.210	.050	.625	-.002	-.735
10	.290	-.272	.278	.138	-.417	-.359	.286	.390	-.425	.173

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Appendix 5 Factor Analysis Results Addressing Or Accounting For Time Lags To The Generation And Sharing Of Benefits

Table 1: Communalities

Communalities

	Initial
Mechanisms are in place to ensure that benefits are allocated for biodiversity conservation measures	1.000
Mechanism in place at national level to ensure that short term benefits do not overrule long term benefits	1.000
A national bio-prospecting fund or similar mechanisms into which a share of the benefits is deposited at the national level	1.000
A national strategy in place for the application of technology, skills and expertise transferred as benefits under ABS deals	1.000
A strategy is in place for building capacity for negotiating ABS contracts (PIC, MAT and appropriate benefit-sharing)	1.000
National and regional strategies in place to promote use of biodiversity for value creation and economic development	1.000
Clear understanding at the national level of the value chain of genetic resources in the ABS pipeline and the implications for benefit-sharing	1.000
A strategy for building capacities of negotiating skills for communities	1.000
Checkpoints are established to ensure the transparency of the value chain through which the genetic resources is going to ensure appropriate benefit-sharing	1.000
Number of contracts negotiated under the ABS regime	1.000
Amount of benefits registered as a result of the ABS regime	1.000
Total contribution of bio-prospecting activities to the national budget	1.000
Total contribution of bio-prospecting activities to biodiversity conservation and education	1.000
Clear rules and guidelines for how monetary and non-monetary benefits will be shared	1.000
Number of nationals trained under ABS agreements	1.000
Clear rules for scientific, technical and research co-	

Extraction Method: Principal Component Analysis.

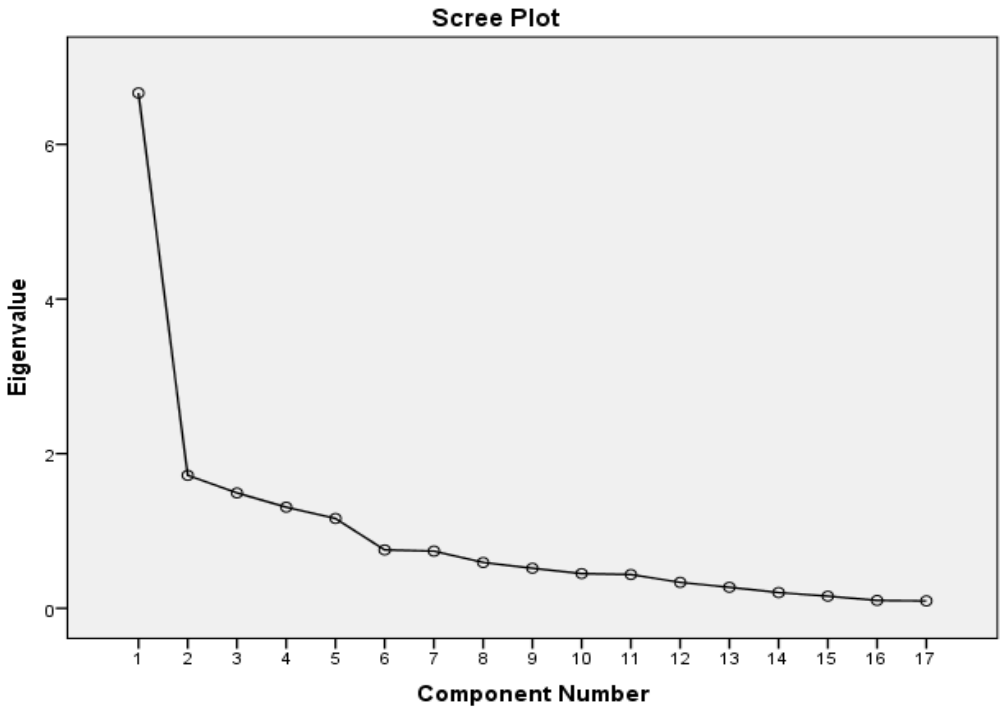
Table 2: Total Variance Explained

Total Variance Explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.664	39.201	39.201	3.475	20.441	20.441
2	1.720	10.116	49.318	2.620	15.412	35.853
3	1.492	8.775	58.093	2.498	14.696	50.549
4	1.308	7.692	65.785	2.119	12.464	63.014
5	1.162	6.834	72.618	1.633	9.605	72.618
6	.754	4.438	77.056			
7	.740	4.351	81.408			
8	.593	3.488	84.895			
9	.518	3.047	87.942			
10	.449	2.642	90.584			
11	.437	2.569	93.153			
12	.335	1.972	95.125			
13	.272	1.598	96.723			

Extraction Method: Principal Component Analysis.

Table 3:



Component Matrix[a]

a. 5 components extracted.

Table 4: Rotated Component Matrix

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
Mechanisms are in place to ensure that benefits are allocated for biodiversity conservation measures	.228	.324	.163	.677	.037
Mechanism in place at national level to ensure that short term benefits do not overrule long term benefits	.291	.709	.071	.110	.147
A national bio-prospecting fund or similar mechanisms into which a share of the benefits is deposited at the national level	.185	.103	.492	.486	.088
A national strategy in place for the application of technology, skills and expertise transferred as benefits under ABS deals	.153	.690	.448	.316	-.045
A strategy is in place for building capacity for negotiating ABS contracts (PIC, MAT and appropriate benefit-sharing)	.088	.783	.201	-.118	.422
National and regional strategies in place to promote use of biodiversity for value creation and economic development	.476	.614	-.053	.372	-.024
Clear understanding at the national level of the value chain of genetic resources in the ABS pipeline and the implications for benefit-sharing	.211	-.036	.103	.827	.050
A strategy for building capacities of negotiating skills for communities					
Checkpoints are established to ensure the transparency of the value chain through which the genetic resources is going to ensure appropriate benefit-sharing	-.082	.424	.067	.486	.544
Number of contracts negotiated under the ABS regime	.192	.170	.088	.021	.881
Amount of benefits registered as a result of the ABS regime	.767	.164	.113	.216	.275
Total contribution of bio-prospecting activities to the national budget	.820	.279	.263	.050	.034
Total contribution of bio-prospecting activities to biodiversity conservation and education	.876	.223	.169	.052	.053
Clear rules and guidelines for how monetary and non-monetary benefits will be shared	.772	.023	.129	.354	-.003
Number of nationals trained under ABS agreements	.048	.266	.749	.146	.111
Clear rules for scientific, technical and research co-operation	.501	.012	.490	.176	.421

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

Table 5: Component Transformational Matrix

Component Transformation Matrix

Component	1	2	3	4	5
1	.604	.466	.444	.392	.260
2	-.686	.617	.099	-.032	.372
3	-.303	-.398	.856	.052	-.123
4	-.265	-.003	-.200	.874	-.355

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Appendix 6 Factor Analysis Results Efficient Understanding Of The ABS Market Structure Within Which The Transaction Must Take Place

Table 1: Communalities

Communalities

	Initial
Measures are in place to resolve the issues relating to the nature of market demand for traditional knowledge	1.000
Measures are in place to resolve the cultural and social complexities and equity issues relevant to the ABS market at national level	1.000
Domestic public and private institutions are adding value to Genetic Resources	1.000
Measures are in place to allow investors to assess the commercial risks and opportunities in a country	1.000
Market opportunities in relevant sectors are identified and fed into the national ABS strategy of the provider or user country	1.000
Provider has a concept for resource evaluation	1.000
Pro-active policy approach towards the private sector and investors interested to invest in the bio-prospecting market at the local level	1.000
The search and information costs in the market for bio-prospecting is low	1.000
Bargaining occurs under competitive conditions	1.000
Measures in place to provide an idea to investors about the potential value of ABS transactions in the market	1.000
There are public and private sector incentives for undertaking bio-prospecting	1.000
The bargaining and decision-making costs in the market for bio-prospecting are low	1.000

Extraction Method: Principal Component Analysis.

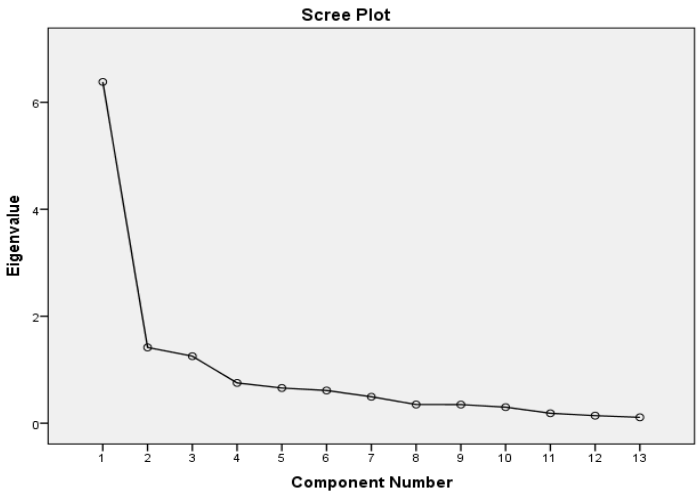
Table 2: Total Variance Explained

Total Variance Explained

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.381	49.081	49.081	3.254	25.034	25.034
2	1.416	10.894	59.975	2.188	16.834	41.868
3	1.253	9.641	69.615	2.002	15.399	57.267
4	.753	5.789	75.404	1.872	14.400	71.667
5	.658	5.058	80.463	1.143	8.795	80.463
6	.611	4.703	85.166			
7	.494	3.799	88.965			
8	.350	2.689	91.655			
9	.348	2.677	94.332			
10	.300	2.307	96.639			

Extraction Method: Principal Component Analysis.

Table 3: Screen Plot



Component Matrix[a]

a. 5 components extracted.

Table 4: Component Matrix

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
Measures are in place to resolve the issues relating to the nature of market demand for traditional knowledge	.185	.193	.114	.898	-.006
Measures are in place to resolve the cultural and social complexities and equity issues relevant to the ABS market at national level	.175	.065	.099	.894	.249
Domestic public and private institutions are adding value to Genetic Resources	.172	.839	.208	.174	.136
Measures are in place to allow investors to assess the commercial risks and opportunities in a country	.412	.513	.570	.089	-.193
Market opportunities in relevant sectors are identified and fed into the national ABS strategy of the provider or user country	.137	.167	.800	.148	.288
Provider has a concept for resource evaluation	.161	.200	.235	.193	.868
Pro-active policy approach towards the private sector and investors interested to invest in the bio-prospecting market at the local level	.508	.482	.396	.137	.086
The search and information costs in the market for bio-prospecting is low	.760	.361	.213	.017	.150
Bargaining occurs under competitive conditions	.537	.532	-.009	.208	.328
Measures in place to provide an idea to investors about the potential value of ABS transactions in the market	.100	.624	.516	.069	.197
There are public and private sector incentives for undertaking bio-prospecting	.510	.241	.619	.091	.068
The bargaining and decision-making costs in the market for bio-prospecting are low	.868	.135	.121	.213	.060
The monitoring and enforcement costs in the market for bio-prospecting are low	.893	.026	.224	.220	.068

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Table 5: Component Transformation Matrix

Component Transformation Matrix

Component	1	2	3	4	5
1	.627	.490	.455	.328	.231
2	-.080	-.275	-.330	.876	.207
3	-.758	.403	.353	.106	.356
4	.162	-.201	-.211	-.336	.881

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Appendix 7 Factor Analysis Results Presence Of An Effective And Functional Biodiveristy Valorization Strategy At National Level

Table 1: Communalities

Communalities

	Initial
A national strategy for the promotion of the use of biodiversity for value creation and economic development is in place	1.000
Existence of potential research partners in the provider country are made public	1.000
Domestic public and private institutions are involved in the identification of the commercial value of biodiversity	1.000
An investment centre at national level which has information or database on the species of interest and with potential for value addition	1.000
A list of species with potential interest do investor and the stages of research at which they are in terms of R&D	1.000
Efficient biodiversity infrastructure at domestic levels for inventories of genetic resources and traditional knowledge are in place	1.000
A clear national process for identification of market opportunities in relevant sectors of importance to ABS is in place	1.000
A data base covering the economic valuation information is in place	1.000
A national strategy for the promotion of the use of biodiversity for value creation and economic development	1.000
A strategy in place to ensure that the stage of collection of plant material, screening, and advanced screening, advanced research and development are all conducted reputably and with quality of cooperation	1.000
A national programme to validate the importance of ethno-botanical knowledge for modern medicinal research in order to capitalize on the economic value is in place	1.000
Economic valuation methods for valuing biodiversity with potential for ABS are being used	1.000

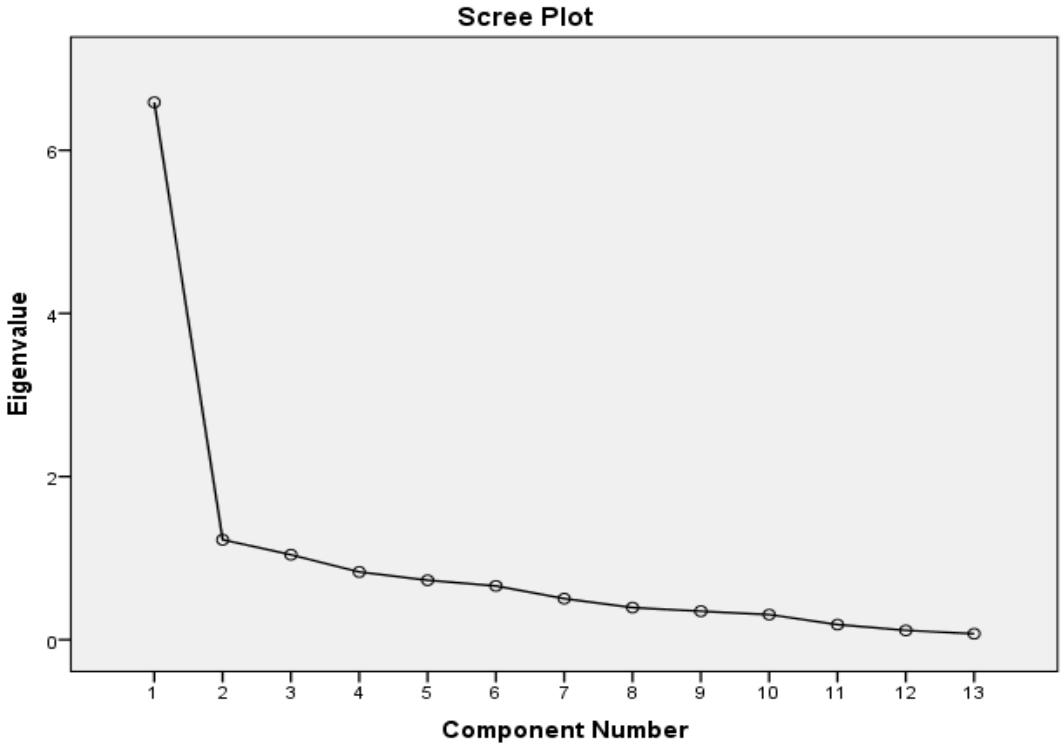
Extraction Method: Principal Component Analysis.

Table 2: Total Variance Explained

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.587	50.671	50.671	2.754	21.188	21.188
2	1.225	9.423	60.094	2.304	17.721	38.909
3	1.042	8.012	68.107	1.917	14.746	53.655
4	.830	6.386	74.493	1.815	13.963	67.618
5	.729	5.609	80.102	1.623	12.484	80.102
6	.659	5.072	85.174			
7	.503	3.871	89.045			
8	.394	3.028	92.074			
9	.349	2.685	94.758			
10	.308	2.370	97.128			

Extraction Method: Principal Component Analysis.

Table 3:



Component Matrix[a]

a. 5 components extracted.

Table 4: Rotated Component Matrix

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
A national strategy for the promotion of the use of biodiversity for value creation and economic development is in place	.169	.337	.118	.132	.795
Existence of potential research partners in the provider country are made public	.153	.220	.115	.841	.088
Domestic public and private institutions are involved in the identification of the commercial value of biodiversity	.507	.018	.067	.684	.234
An investment centre at national level which has information or database on the species of interest and with potential for value addition	.192	.434	.558	.188	.439
A list of species with potential interest do investor and the stages of research at which they are in terms of R&D	.371	.167	.523	.257	.585
Efficient biodiversity infrastructure at domestic levels for inventories of genetic resources and traditional knowledge are in place	.047	.093	.901	.027	.157
A clear national process for identification of market opportunities in relevant sectors of importance to ABS is in place	.793	.357	-.081	.171	.194
A data base covering the economic valuation information is in place					
A national strategy for the promotion of the use of biodiversity for value creation and economic development	.150	.740	.177	.482	.213
A strategy in place to ensure that the stage of collection of plant material, screening, and advanced screening, advanced research and development are all conducted reputably and with quality of cooperation	.256	.744	.200	.198	.192
A national programme to validate the importance of ethno-botanical knowledge for modern medicinal research in order to capitalize on the economic value is in place	.712	.202	.264	.209	.054
Economic valuation methods for valuing biodiversity with potential for ABS are being used	.514	.269	.539	.334	-.239
Clear rules and guidelines how the economic valuation will contribute to deciding on ABS permits	.750	.230	.207	.236	.370

Extraction Method: Principal Component Analysis.

a. Rotation converged in 8 iterations.

Table 5: Component Transformational Matrix

Component Transformation Matrix

Component	1	2	3	4	5
1	.564	.501	.378	.391	.367
2	-.501	.041	.744	-.326	.296
3	.070	-.566	.473	.541	-.398
4	-.609	.118	-.255	.666	.326

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Appendix 8 Factor Analyais Results Effective Measures To Address Information Asymmetry In The ABS Implementation Framework Are In Place

Table 1: Communalities

Communalities

	Initial
A national ABS Clearing House Mechanism is in place	1.000
An ABS National Advisory Council/Committee with multi-disciplinary and multi-stakeholder representation in place	1.000
A functional and effective Communication Education and Public Awareness Initiative on ABS in place at the national level	1.000
Rules and guidelines to ensure that functional and effective communication process at the national level are clear	1.000
Clear rules, guidelines and process for dealing with traditional knowledge (TK) are in place	1.000
Measures are in place to reduce potential negotiating and other inequalities between stakeholders	1.000
A clear policy and understanding of technology transfer at national level	1.000
There is a clear policy on science, research and technology and its role in national and economic development	1.000
A national strategy for awareness raising on the value of Traditional Knowledge associated with genetic resources in place	1.000
Definition of the concept of Genetic Resources as provided for in the Nagoya Protocol is understood by all players	1.000
The definition of the concept of the utilization of genetic resources as provided for in the Nagoya Protocol is understood by all players	1.000

Extraction Method: Principal Component Analysis.

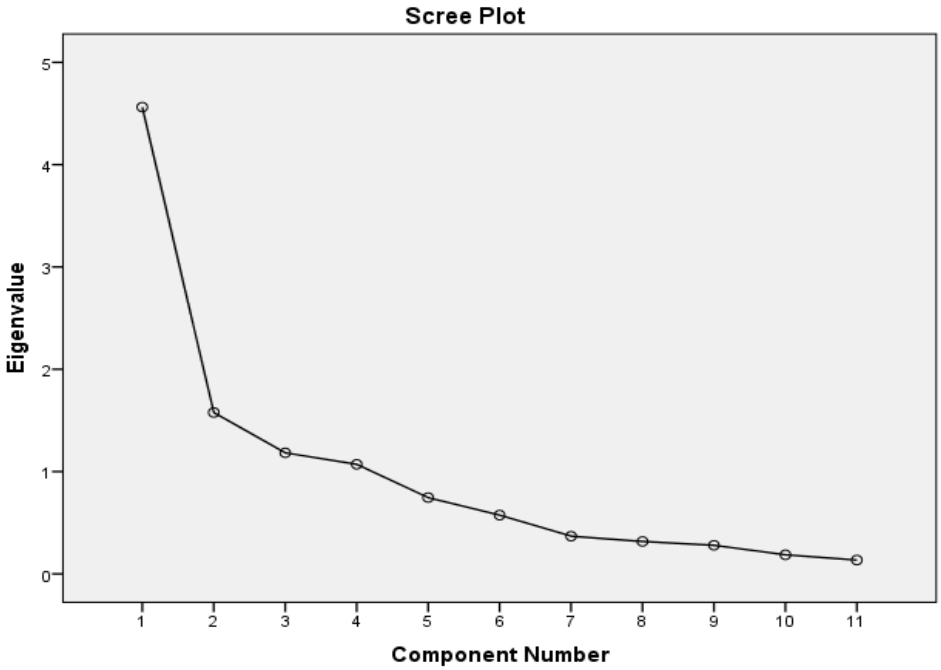
Table 2: Total Variance Explained

Total Variance Explained

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.563	41.478	41.478	2.218	20.165	20.165
2	1.577	14.339	55.817	1.951	17.736	37.901
3	1.183	10.758	66.575	1.763	16.024	53.925
4	1.071	9.734	76.309	1.712	15.566	69.491
5	.746	6.779	83.088	1.496	13.597	83.088
6	.574	5.222	88.310			
7	.369	3.350	91.660			
8	.317	2.877	94.538			
9	.279	2.540	97.078			

Extraction Method: Principal Component Analysis.

Table 3:



Component Matrix[a]

a. 5 components extracted.

Table 4: Totated Component Matrix

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
A national ABS	.199	.044	.256	.864	-.052
An ABS Natio	.229	.177	.133	.811	.278
A functional a	.037	.200	.782	.386	.050
Rules and gui					
Clear rules, gu	-.069	.394	.021	.169	.755
Measures are	.641	.030	.525	.198	.194
A clear policy	.219	-.058	.313	.018	.808
There is a clea					
A national stra	.136	.904	.109	.105	.103
Definition of th	.134	.914	.146	.082	.105
The definition o	.294	.142	.762	.086	.333

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Table 5: Component Transformation Matrix

Component Transformation Matrix

Component	1	2	3	4	5
1	.539	.394	.492	.444	.338
2	-.476	.797	-.163	-.169	.289
3	-.473	-.436	.390	.029	.658
4	.487	-.041	-.097	-.762	.414

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Appendix 9 Factor Analysis Results Presence Of Effective And Efficient Measures To Build Trust (Social Capital) Amongst Stakeholders

Table 1: Communalities

Communalities

	Initial
Mechanisms to signal the quality of genetic resources to potential bio-prospectors are in place	1.000
A valorization strategy is in place	1.000
An effective, transparent legal, policy and administrative ABS domestic framework is in place	1.000
Effective and functional administrative procedures are in place	1.000
Measures are in place that deal with addressing information asymmetry	1.000
A good governance structure is in place at the nationa level	1.000
A “Black List” of those firms and organizations that contribute to bio-piracy is in place (including the enc pharmaceutical companies who buy from such genetic resource intermediaries)	1.000
The development of ethical bio-trade guidelines and codes of conduct in country	1.000
The internationally recognized certificate is being used	1.000
Creation of reputable networks of research collaborators with best practice codes	1.000
Measures to ensure that the stages of collection of plant material, screening, and advanced screening, advanced research and development are all	1.000

Extraction Method: Principal Component Analysis.

Table 2: Total Variance Explained

Total Variance Explained

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.359	39.632	39.632	2.134	19.399	19.399
2	1.619	14.716	54.348	1.887	17.157	36.556
3	1.100	10.000	64.348	1.702	15.475	52.031
4	.806	7.323	71.671	1.549	14.079	66.110
5	.720	6.545	78.216	1.332	12.106	78.216
6	.616	5.599	83.814			
7	.521	4.739	88.554			
8	.395	3.591	92.144			
9	.366	3.327	95.472			

Extraction Method: Principal Component Analysis.

Table 3: Component Transformation Matrix

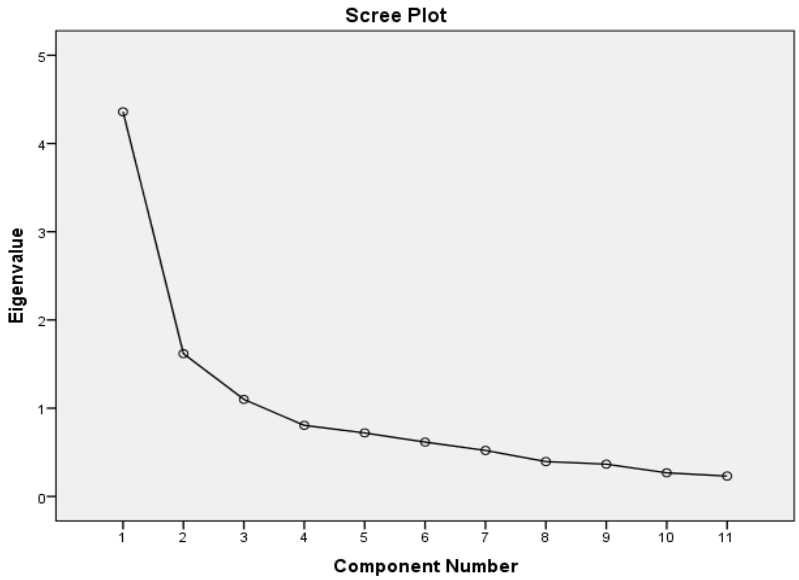
Component Transformation Matrix

Component	1	2	3	4	5
1	.462	.533	.439	.426	.359
2	.814	-.304	-.480	-.081	.087
3	-.326	-.251	-.394	.602	.559
4	-.132	.570	-.413	-.528	.456

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Table 4:



Component Matrix[a]

a. 5 components extracted.

Table 5: Rotated Component Matrix

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
Mechanisms to signal the quality of genetic resources to potential bio-prospectors are in place	.009	.767	.309	.189	.184
A valorization strategy is in place	.155	.823	.196	.135	.038
An effective, transparent legal, policy and administrative ABS domestic framework is in place	.895	.071	.066	.067	-.045
Effective and functional administrative procedures are in place	.655	.363	-.217	-.048	.458
Measures are in place that deal with addressing information asymmetry	.298	.398	.338	.227	.421
A good governance structure is in place at the national level	.825	.013	.260	.254	.133
A “Black List” of those firms and organizations that contribute to bio-piracy is in place (including the end pharmaceutical companies who buy from such genetic resource intermediaries)	.002	.090	.147	.795	.335
The development of ethical bio-trade guidelines and codes of conduct in country					
The internationally recognized certificate is being used	.294	.279	.059	.779	.040
Creation of reputable networks of research collaborators with best practice codes	.063	.081	.128	.253	.863
Measures to ensure that the stages of collection of plant material, screening, and advanced screening, advanced research and development are all conducted with reputation and quality of cooperation	.137	.201	.870	.017	.174
	.040	.440	.732	.262	-.023

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

Appendix 10 Factor Analysis Results For An Effective And Functional Biodiveristy Valorization Strategy At National Level

Table 1: Communalities

Communalities

	Initial
A national strategy for the promotion of the use of biodiversity for value creation and economic development is in place	1.000
Existence of potential research partners in the provider country are made public	1.000
Domestic public and private institutions are involved in the identification of the commercial value of biodiversity	1.000
An investment centre at national level which has information or database on the species of interest and with potential for value addition	1.000
A list of species with potential interest do investor and the stages of research at which they are in terms of R&D	1.000
Efficient biodiversity infrastructure at domestic levels for inventories of genetic resources and traditional knowledge are in place	1.000
A clear national process for identification of market opportunities in relevant sectors of importance to ABS is in place	1.000
A data base covering the economic valuation information is in place	1.000
A national strategy for the promotion of the use of biodiversity for value creation and economic development	1.000
A strategy in place to ensure that the stage of collection of plant material, screening, and advanced screening, advanced research and development are all conducted reputably and with quality of cooperation	1.000
A national programme to validate the importance of ethno-botanical knowledge for modern medicinal research in order to capitalize on the economic value is in place	1.000
Economic valuation methods for valuing biodiversity with potential for ABS are being used	

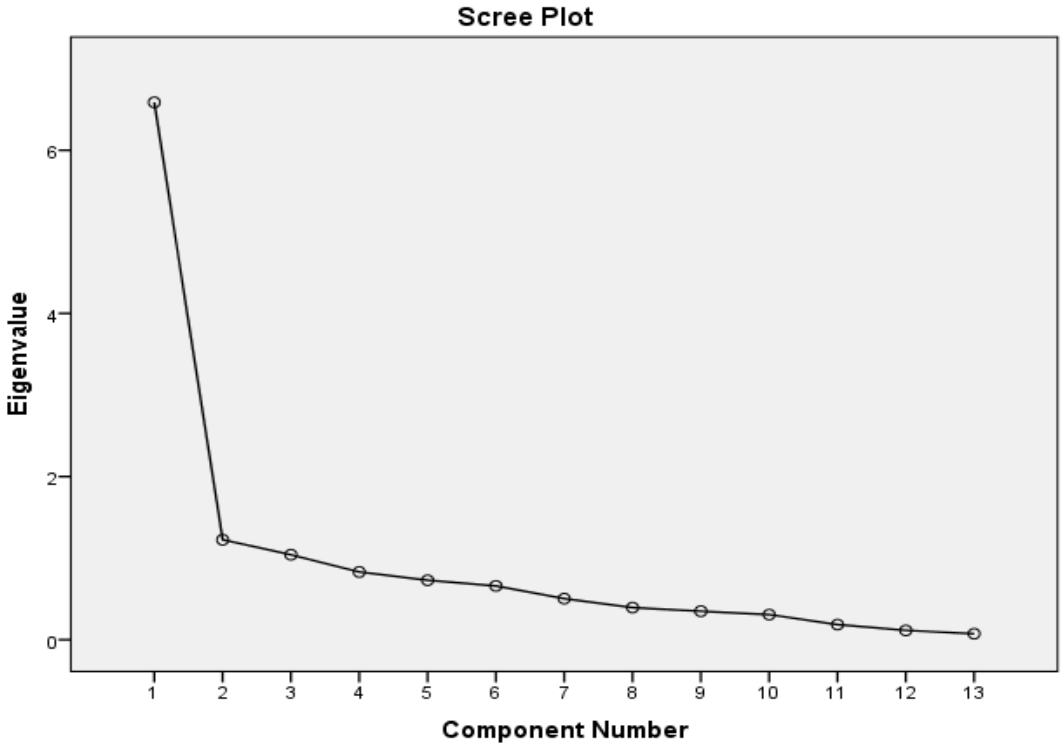
Extraction Method: Principal Component Analysis.

Table 2: Total Variance Explained

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.587	50.671	50.671	2.754	21.188	21.188
2	1.225	9.423	60.094	2.304	17.721	38.909
3	1.042	8.012	68.107	1.917	14.746	53.655
4	.830	6.386	74.493	1.815	13.963	67.618
5	.729	5.609	80.102	1.623	12.484	80.102
6	.659	5.072	85.174			
7	.503	3.871	89.045			
8	.394	3.028	92.074			
9	.349	2.685	94.758			
10	.308	2.370	97.128			

Extraction Method: Principal Component Analysis.

Table 3:



Component Matrix[a]

a. 5 components extracted.

Table 4: Rotated Component Matrix

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
A national strategy for the promotion of the use of biodiversity for value creation and economic development is in place	.169	.337	.118	.132	.795
Existence of potential research partners in the provider country are made public	.153	.220	.115	.841	.088
Domestic public and private institutions are involved in the identification of the commercial value of biodiversity	.507	.018	.067	.684	.234
An investment centre at national level which has information or database on the species of interest and with potential for value addition	.192	.434	.558	.188	.439
A list of species with potential interest do investor and the stages of research at which they are in terms of R&D	.371	.167	.523	.257	.585
Efficient biodiversity infrastructure at domestic levels for inventories of genetic resources and traditional knowledge are in place	.047	.093	.901	.027	.157
A clear national process for identification of market opportunities in relevant sectors of importance to ABS is in place	.793	.357	-.081	.171	.194
A data base covering the economic valuation information is in place					
A national strategy for the promotion of the use of biodiversity for value creation and economic development	.150	.740	.177	.482	.213
A strategy in place to ensure that the stage of collection of plant material, screening, and advanced screening, advanced research and development are all conducted reputably and with quality of cooperation	.256	.744	.200	.198	.192
A national programme to validate the importance of ethno-botanical knowledge for modern medicinal research in order to capitalize on the economic value is in place	.712	.202	.264	.209	.054
Economic valuation methods for valuing biodiversity with potential for ABS are being used	.514	.269	.539	.334	-.239
Clear rules and guidelines how the economic valuation will contribute to deciding on ABS permits	.750	.230	.207	.236	.370

Extraction Method: Principal Component Analysis.

a. Rotation converged in 8 iterations.

Table 5: Component Transformational Matrix

Component Transformation Matrix

Component	1	2	3	4	5
1	.564	.501	.378	.391	.367
2	-.501	.041	.744	-.326	.296
3	.070	-.566	.473	.541	-.398
4	-.609	.118	-.255	.666	.326

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Appendix 11 Factor Analysis Results For The National And International Levels Indicating Whether Crticial Factors Are Valid

Table 1: Communalities

Communalities

	Initial	Extraction
Good governance structure	1.000	.584
Assignment of property rights and intellectual property	1.000	.402
Administrative procedures/ complexity	1.000	.672
Time lags/timeline to benefits	1.000	.494
Information asymmetry	1.000	.650
Market structure	1.000	.732
Valorisation of biodiversity	1.000	.647
Social capital	1.000	.663

Extraction Method: Principal Component Analysis.

Table 2: Total Variance Explained

Total Variance Explained

	Initial Eigenvalues			Loadings			Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.584	44.806	44.806	3.584	44.806	44.806	2.683	33.535	33.535
2	1.258	15.730	60.536	1.258	15.730	60.536	2.160	27.001	60.536
3	.797	9.962	70.498						
4	.691	8.632	79.130						
5	.587	7.340	86.471						
6	.421	5.262	91.732						
7	.382	4.780	96.512						
8	.279	3.488	100.000						

Extraction Method: Principal Component Analysis.

Table 3: Component Matrix[a]

Component Matrix[a]

	Component	
	1	2
Good governance structure	.621	.445
Assignment of property rights and intellectual property	.461	.435
Administrative procedures/ complexity	.574	.585
Time lags/timeline to benefits	.690	.133
Information asymmetry	.782	-.195
Market structure	.732	-.443
Valorisation of biodiversity	.625	-.507
Social capital	.802	-.140

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Table 4: Rotated Component Matrix

Rotated Component Matrix[a]

	Component	
	1	2
Good governance structure	.209	.735
Assignment of property rights and intellectual property	.090	.628
Administrative procedures/ complexity	.085	.815
Time lags/timeline to benefits	.457	.534
Information asymmetry	.733	.334
Market structure	.848	.109
Valorisation of biodiversity		
Social capital		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Table 5 :Componet Transformation Matrix

Component Transformation Matrix

Component	1	2
1	.783	.623
2	-.623	.783

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Table 6: Factor Analysis

Communalities

	Initial
Good governance structure	1.000
Assignment of property rights and intellectual property	1.000
Administrative procedures/ complexity	1.000
Time lags/timeline to benefits	1.000
Information asymmetry	1.000
Market structure	1.000
Valorisation of biodiversity	1.000
Social capital	1.000

Extraction Method: Principal Component Analysis.

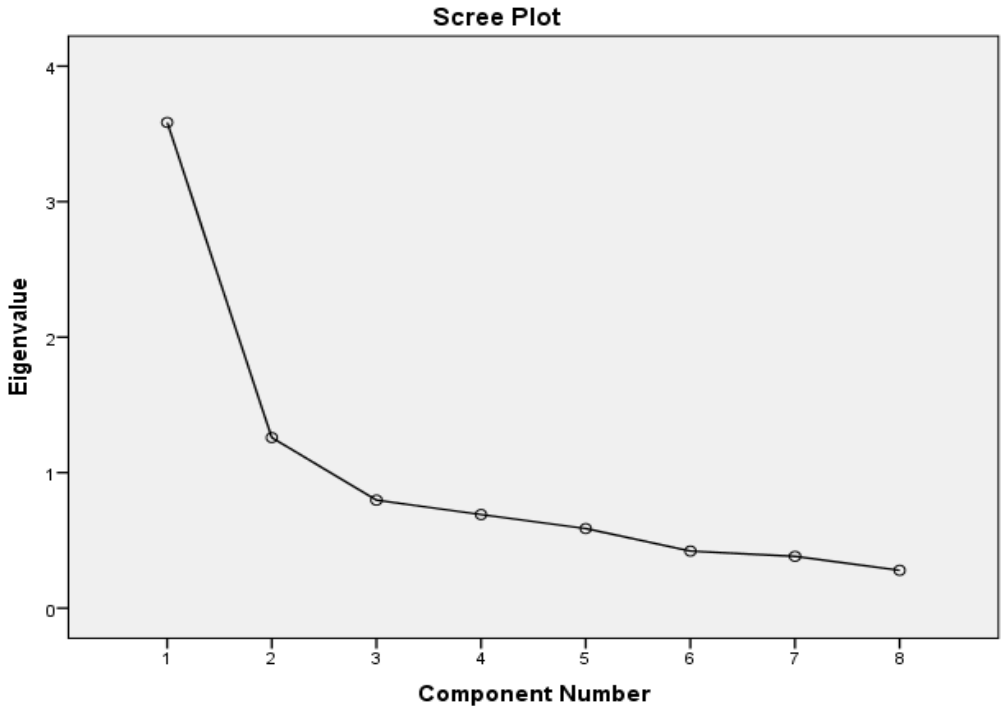
Table 7: Total Variance Explained

Total Variance Explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.584	44.806	44.806	2.683	33.538	33.538
2	1.258	15.730	60.536	1.787	22.339	55.877
3	.797	9.962	70.498	1.170	14.622	70.498
4	.691	8.632	79.130			
5	.587	7.340	86.471			
6	.421	5.262	91.732			

Extraction Method: Principal Component Analysis.

Table 8:



Component Matrix[a]

a. 3 components extracted.

Table 9: Rotated Component Matrix

Rotated Component Matrix[a]

	Component		
	1	2	3
Good governance structure	.210	.796	.107
Assignment of property rights and intellectual property	.087	.154	.953
Administrative procedures/ complexity	.087	.887	.110
Time lags/timeline to benefits	.457	.423	.332
Information asymmetry	.733	.254	.225
Market structure	.849	.112	.025
Valorisation of biodiversity	.804	.028	-.061
Social capital	.714	.293	.269

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 4 iterations.

Table 10: Component Transformation Matrix

Component Transformation Matrix

Component	1	2	3
1	.783	.530	.326
2	-.623	.670	.405
3	-.004	-.520	.854

Extraction Method: Principal Component Analysis.

Appendix 12 Factor Analsys Results Of Internal And External Factors That May Impact On ABS Implementation

Table 1: Communalities

Communalities

	Initial
Good governance structure	1.000
Assignment of property rights and intellectual property	1.000
Administrative procedures/ complexity	1.000
Time lags/timeline to benefits	1.000
Information asymmetry	
Market structure	1.000
Valorisation of biodiversity	1.000
Social capital	

Extraction Method: Principal Component Analysis.

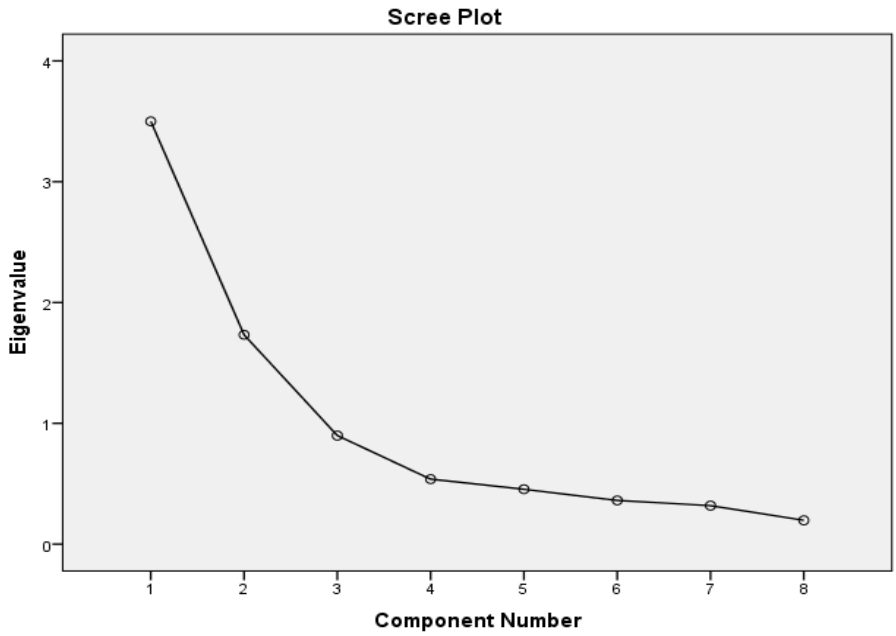
Table 2: Total Variance Explained

Total Variance Explained

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.499	43.741	43.741	3.029	37.859	37.859
2	1.733	21.663	65.403	2.204	27.545	65.403
3	.898	11.231	76.634			
4	.538	6.722	83.356			
5	.454	5.678	89.034			
6	.362	4.522	93.555			

Extraction Method: Principal Component Analysis.

Table 3:



Component Matrix[a]

a. 2 components extracted.

Table 4: Rotated Component Matrix

Rotated Component Matrix[a]

	Component	
	1	2
Good governance structure	.036	.884
Assignment of property rights and intellectual property	.238	.696
Administrative procedures/ complexity	.094	.870
Time lags/timeline to benefits	.661	.280
Information asymmetry	.699	.303
Market structure	.817	.045
Valorisation of biodiversity		
Social capital		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Table 5: Component Transformation Matrix

Component Transformation Matrix

Component	1	2
1	.856	.516
2	-.516	.856

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Table 6: Communalities

Communalities

	Initial
Good governance structure	1.000
Assignment of property rights and intellectual property	1.000
Administrative procedures/ complexity	1.000
Time lags/timeline to benefits	1.000
Information asymmetry	1.000
Market structure	1.000
Valorisation of biodiversity	
Social capital	

Extraction Method: Principal Component Analysis.

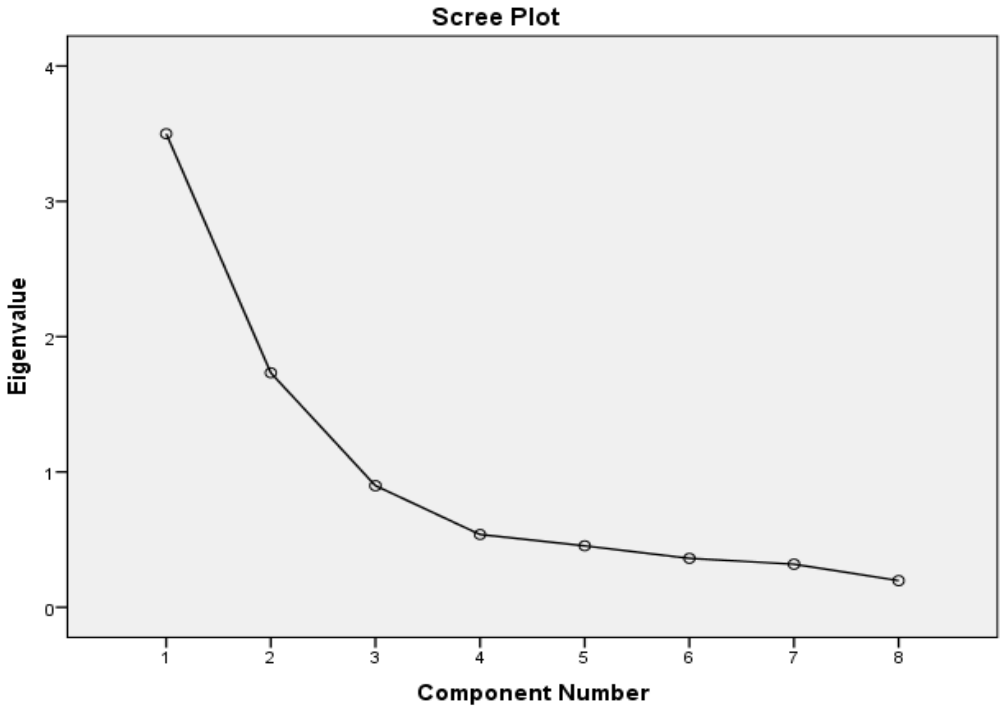
Table 7: Total Variance Explained

Total Variance Explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.499	43.741	43.741	2.277	28.462	28.462
2	1.733	21.663	65.403	2.089	26.106	54.568
3	.898	11.231	76.634	1.162	14.529	69.098
4	.538	6.722	83.356	1.141	14.258	83.356
5	.454	5.678	89.034			
6	.362	4.522	93.555			

Extraction Method: Principal Component Analysis.

Table 8



Component Matrix[a]

a. 4 components extracted.

Table 9: Rotated Component Matrix

Rotated Component Matrix[a]

	Component			
	1	2	3	4
Good governan	-.091	.846	.317	.043
Assignment c	.447	.785	-.126	-.138
Administrative b	-.031	.831	.059	.348
Time lags/time	.299	.157	.243	.860
Information as	.303	.176	.825	.312
Market structu	.689	.015	.287	.341
Valorisation c	.899			
Social capital				

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Table 10: Component Transformation Matrix

Component Transformation Matrix

Component	1	2	3	4
1	.672	.470	.421	.388
2	-.499	.858	-.094	-.075
3	.542	.204	-.498	-.645

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Appendix 13 Questionnaire for the Namibian Case Study on ABS

Interviews on implementation of Access to Genetic Resources, the associated traditional knowledge and the Sharing of the resultant benefits (ABS)

Short introduction on critical factors necessary for success in implementing the ABS legislation: Critical Factors:

1. Good governance structure

in this context means that both Namibia as a provider country (provider of genetic resources) have put in place legislative and policy measures to ensure that stakeholders have incentives to participate in the ABS market place thus leading to the generation of benefits (Monetary and otherwise) for both Namibia and the user country.

2. Assigning property rights and intellectual property rights

This referes to how property rights are assigned in Namibia‘s domestic legislation in terms of who owns the genetic resources and how this ownership right enables that person/s to use, sell, transfer or exchange genetic resources and/or exclude others from doing these things.

The assignment of Intellectual Property Rights (IPR) refers to how IPR is assigned in Namibias domestic legislation in the context of ABS. The questions is what are the rights given to persons over the creations of their minds in the R&D process as well as to their traditional knowledge. Is it clear who owns knowledge e.g. traditional knowledge?

3. Administrative Structures and bureaucratic procedures

How are Namibia’s laws applied in practice? How easy is it for a researcher/investor/user to understand and apply for an access agreement for Research & Development in bio-prospecting in Namibia. This also includes the transaction costs that the researcher/investor/ user have to incure. In other words are the procedures too bureaucratic or not and do you have to incur significant costs just to get a research permit? Do you get your research permit in the within the time that it is stipulated?

In other words how complex and bureaucratic is the law in terms of practical implementation and therefore what can we do to avoid that it is too complex in terms of implementation.

4. Time lags to benefit sharing

In this context time lags refer to the fact that if the time lag between the collection and provision of samples and the development of a marketable product is accounted for by adequate and appropriate benefits flowing to provider countries this will indicate the effectiveness of the ABS instrument.

In other words how long does it take from the collection of materials to the generation of the first benefits and how do we deal with this to manage expectations and to ensure that maximum benefits (Monetary and non-monetary) accrue to Namibia

5. Market Structure of ABS

In this context market structure means that all relevant stakeholders especially the regulators, private sector and researchers understand the characteristics of the market and the demand and supply forces in the bio-prospecting and bio-trade market that prevails in a provider/user country.

It also assumes that there is a well functioning market for biodiversity uses within the provider country. In other words do we really understand how the ABS market work? What are the indicators that shows that we understand how this market works?

6. Valorization (Value adding to) of Biodiversity

In this context the valorization of biodiversity refers to the development of valorization strategies at the national level especially in provider countries that can help add value to their biodiversity as it goes up the value chain within the country and to the market.

In other words do we know the value of our genetic resources? If not what do we need to have in place that can help us add more value to our resources so that we do not only provide raw materials, but that we add value and thus can negotiate more benefits that further serve as incentive for conservation?

7. Social Capital

This refers to the need to build trust between and amongst the players in the ABS sector. ABS transactions are long-term contractual relations between academia, government, and private sector both within and outside Namibia and for these relationships to last trust building is necessary.

8. Information Asymmetry

Information assymetry refers to the imbalance of power in negotiations and transactions of ABS agreements because one party has more or better information than the other. This imbalance can result in the transaction being influenced negatively and can result in the contract or agreement not being entered into.
The problem of uncertain product quality in the market for traditional knowledge-related information and tangible genetic resources where the quality of genetic resources samples or the reliability of the traditional knowledge-based information or both can only be verified after the good has been traded, leads to problems of information asymmetries and in extreme cases, to a breakdown of market exchange.

Therefore what needs to be in place at the national level to deal with these imbalance of power to ensure that agreements are reached and benefits flow?

Please answer the following questions below and explain your answer as appropriate.

1.The beginnings of the ABS Dialogue (1990- 1995)

- ***Good governance structure***
- ***Assigning property rights and intellectual property rights***

1.What legislative measures were put in place that set the framework for the ABS dialogue to be set in Namibia?

2.Does our governance structure increase legal certainty i.e. investor feel secure to invest as the relevant laws are there to govern ABS transactions?

3.Who legally owns genetic resources?

4.Who owns Traditional Knowledge in Namibia?

5. What lessons have we learned with regard to good governance structures in Namibia?

2. Experience on ABS five years after independence and the beginning of the dialogue (1995-2000)

- ***Administrative Structures and bureaucratic procedures***
- ***Time lags to benefit sharing***

1.Would you say that the way Namibia has been implementing legislation contributes to administrative efficiency in the environmental and ABS sector?

2. Are the institutions that governs the environmental sector efficient and effective?

3.Would you say that the CBNRM programme in Namibia set the frame for ABS related work?

4.What lessons have been generated by CBNRM and other programs in Namibia with regard to the sharing of benefits and the time it takes to generate benefits?

5.In terms of managing expectations with regard to benefit sharing what lessons have been learned?

3. Informed decisions 15 years after independence (2000-2005)

- ***Market Structure of ABS***
- ***Valorization of Biodiversity***

1. Do you think that the frameworks and experience of the first two time frames helped us to make informed decisions with regard to ABS in Namibia? Have we involved industry to its full potential?

2. Have we in the process of implementing legislation in Namibia come to understand the market structure of the sectors that we are attempting to regulate e.g. CBNRM, water sector, mining sector, agricultural sector? Are there lessons that are important for ABS and its market structure?

3. What role can technology transfer and capacity building play in ABS implementation?

4.What has been our experience with the valorisation of Namibia's biodiversity since independence? Are there lessons learned?

5. What is the role of the private sector and other stakeholders in valorisation of biodiversity within the context of ABS?

4. Current state of affairs with ABS (2005 – 2012)

- ***Social Capital***
- ***Information Asymmetry***

1. Do you agree that firms really have misrepresented the value of the end product or the extent of usage of traditional knowledge to communities and access authorities and sometimes also purposefully failed to disclose the true value of such inputs to the research process?

Communities may have no market related knowledge of the value of their TK and resources?

2. How has Namibia dealt with the issue of information asymmetry over the years?

3. What lessons have we learned?

4. Do you agree that it is essential to build trust between all players in the ABS field not only in Namibia but also internationally? Are there lessons learned from the other sectors such as CBNRM, biosafety, and fisheries over the years in Namibia?

5. Has Namibia gained the trust of stakeholders both within and outside the country?

6. Do you believe that social capital can contribute to ABS implementation nationally and internationally?

7. What lessons have we learned over the years in terms of building social capital?

Thank you for the taking the time to complete this questionnaire

Sem T
Shikongo

Appendix 13 ABS Excerpts From The Namibian National Biodiversity Strategy And Action Plan (NBSAP)

APPENDIX 8.1
Excerpt from the Biodiversity and Development in Namibia – Namibia's ten year strategic plan for sustainable development through biodiversity conservation 2001-2010

The appendix reflects only the strategic actions relevant to biotrade and bioprospecting

Strategic Aim 2.5
Promote and control bioprospecting and biotrade to generate sustainable benefits for Namibia

a) Improve national and local capacity to benefit from and control biotrade

Key activities are the development of national scientific facilities and private enterprises to add value to genetic resources; the identification of additional biological resources for potential trade and product development; a baseline study of the current and potential genetic resources industry; the development of local negotiations skills in order to facilitate fair, informed and mutually beneficial agreements; and the promotion of mechanisms for the sustainable economic use of natural resources

Targets: All Namibian stakeholders in the development of new biotrade agreements are equipped with relevant negotiations and monitoring skills by 2003, three new value addition enterprises are established.

b) Raise public and political awareness of issues, costs and benefits of biotrade and bioprospecting

This will require information and training on the new policy and legislation at grassroots, NGO, regulatory agency and political levels, using prepared materials; a national workshop to educate stakeholders on intellectual property issues; the assessment of training needs, institutions and candidates for focused training in regulatory, research and community aspects; and the integration of issues into tertiary curricula.

Targets: Awareness materials are compiled and distributed to target audiences, with the training and information policy and legislation, by December 2003

c) Promote effective cooperation at relevant levels

There has recently been vastly improved networking on these issues between key stakeholders at national and international levels. This promotes research and development, the harmonization of national frameworks within the SADC region, and regulatory efficiency. Local level networking needs further emphasis.

Targets: Namibian legislation on access to genetic resources harmonized with existing SADC frameworks by December 2005; contact established with key research and development institutions by mid - 2002

Strategic Aim 6.6
Build awareness and strengthen capacity to regulate and promote marine bioprospecting in line with national policy and legislation

Marine organisms, especially invertebrates of the sea floor, are increasingly under the spotlight of the pharmaceutical and agrochemical industries. Namibia needs to control and, where desirable, promote this largely unseen bioprospecting activity, and ensure that revenues are locally shared.

Targets: A focused study of marine bioprospecting in Namibia is completed by September 2003; a consultative strategy for the promotion, collaboration and regulation of bioprospecting activities is ready by December 2003.

Strategic Aim 9.4
Strengthen communities to participate as equal partners, e.g. in biotrade and bioprospecting

a) Develop an equitable benefit-sharing framework
Communities are the main custodians and users of biodiversity and should be seen as equal partners in biodiversity management. Communities need to share equitably in the benefits arising from the use of their knowledge, innovations and practices relevant to the conservation of biodiversity.

Targets: The Access to Genetic Resources and Related Traditional Knowledge Bill is enacted, and awareness workshops on its provisions are held in all regions, by June 2003

b) Promote mechanisms for communities to share their knowledge with other partners

Communities have a wide range of knowledge innovations and practices that are relevant to the conservation and sustainable use of biodiversity. Such knowledge systems should be promoted for wider application with the prior informed consent (PIC) of such communities.

Targets: Existing customary codes of ethical conduct are identified and appropriate models of conduct for research, access to knowledge, and information management on indigenous knowledge systems are developed by 2005